Annotated Acronyms and Abbreviations of Marine Science Related Activities

(Third Edition)

1981

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Environmental Data and Information Service

ANNOTATED ACRONYMS AND ABBREVIATIONS

OF

MARINE SCIENCE RELATED ACTIVITIES

(Third Edition)

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Revised by: Charlotte M. Ashby, 1976 (Second Edition)

Revised by: Charlotte M. Ashby
and Alan R. Flesh, 1981 (Third Edition)

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INTRODUCTION

One of the more fascinating aspects of compiling this publication was the realization of the growth of interests in marine sciences, especially during the past decade. Dates of origin of the many agencies show this growth. The increase in the number of acronyms and abbreviations in use since the first and second edition of Annotated Acronyms and Abbreviations appeared in 1969 and 1976 is another indication. The varied organizations involved show the changes in the concept of oceanographic sciences. In the beginning years, it was knowledge for the sake of knowledge; in recent years, it is application of knowledge acquired for many and varied purposes.

Changes in man's approach to the environment are also apparent from this compilation: from the initial use of the environment for economic purposes to a realization that the environment must at the same time be preserved and protected.

Two general suggestions were made following publication of the second edition: that addresses and that national acronyms and abbreviations should be included. Time did not permit the inclusion of both in this third edition. Because the librarians and other members of the newly-formed Marine Science Librarians Association (now the International Association of Marine Science Libraries and Information Centers, IAMSLIC) requested that national acronyms be included, we considered this request more important and have done so.

The present edition includes descriptive entries and indexes to acronyms and abbreviations that are listed alphabetically by title and by acronym/abbreviation. The descriptive entries are grouped into two major chapters: international and national. To show pertinent relationships, a single descriptive entry may include two or more acronyms or abbreviations.

Sources for information include newsletters, minutes of meetings, annual reports, journal articles, and correspondence from users of the second edition. We wish particularly to acknowledge the assistance of the staff of UNESCO's Division of Marine Science who made substantive changes and additions.

We wish to acknowledge the editorial assistance provided by The Environmental Science and Information Center (ESIC), one of NODC's co-organizations within NOAA's Environmental Data and Information Service; we especially acknowledge the assistance provided by Evelyn Liddel of ESIC, who not only entered the text of both the second and third editions into machine-readable form but provided valuable suggestions in formatting the text.

Despite the best efforts of all who contributed to it, however, this publication still has its shortcomings. For these we ask the readers' indulgence. We apologize to our foreign readers for the damage done their languages by the absence of diacritical marks. The word processor available to us, however, lacked this capability. We are also acutely aware that the rush of scientific progress leaves any compilation such as this in its wake, forever struggling to keep pace. We hope that people who find this publication useful will help us keep it accurate and up-to-date. If we have overlooked an acronym or misinterpreted it, please correct our mistake by writing the National Oceanographic Data Center, NOAA/EDIS D7822, Washington, D.C. 20235.

I. INTERNATIONAL ORGANIZATIONS

International organizations fall into two categories: International Governmental Organizations (IGO's) and International Nongovernmental Organizations (INGO's or NGO's). The governmental organizations are those entered into by treaty or other agreement between two or more national governments. The nongovernmental organizations are generally composed of organizations or individuals who have a common interest, which often is a specialized scientific discipline.

While separate entities, governmental and nongovernmental agencies often cooperate on programs and projects of mutual interest. Direction and funding may be supplied by the governmental organizations, whereas scientific expertise is supplied by the nongovernmental groups. The prime governmental organization with universal interests in marine sciences is the Intergovernmental Oceanographic Commission (IOC) of UNESCO, and the prime nongovernmental organization with universal interests in marine sciences is the Scientific Committee on Oceanic Research (SCOR) of the International Council of Scientific Unions (ICSU). IOC and SCOR participate in many of the major scientific programs in oceanography. Other agencies, both governmental and nongovernmental, have more parochial interests, limited to a geographic area or a special subject matter.

Part I.A describes intergovernmental organizations; descriptions of the U.N. organizations precede those of independent agencies, which appear in alphabetical order; Part I.B describes nongovernmental organizations; descriptions of the organizations of the International Council of Scientific Unions (ICSU) precede those of the independent or unaffiliated groups, which again appear in alphabetical order; Part I.C describes joint organizations; and Part I.D describes data centers and other facilities either operated by international organizations or as depositories of international data.

A. INTERGOVERNMENTAL ORGANIZATIONS

United Nations

1. UNITED NATIONS: U.N.

The United Nations was created in 1945 to maintain international peace and security, to develop friendly relations among nations, and to achieve international cooperation in solving economic, social, cultural, and humanitarian problems. It is a forum for bringing nations together to attain common goals. One such conference was the 1971 U.N. Conference on the Human Environment, known as UNCHE. Many recommendations for programs and projects dealing with study, improvement, and conservation of the environment, including the marine environment, originated during UNCHE.

Within its headquarters is an Ocean Economics and Technology Office (OETO), responsible for coordination of U.N. programs in ocean-related activities at the interdepartmental level. One of OETO's projects is the development of a Marine and Coastal Technology Information Service (MACTIS), which led to the U.N. becoming a sponsor with the Food and Agriculture Organization (FAO) and the Intergovernmental Oceanographic Commission (IOC) of the Aquatic Sciences and Fisheries Information System (ASFIS). U.N. also sponsors a Group of Experts on the Standardization of Geographic Names, which serves as a coordinating group for the Conference on Standardization of Geographic Names, which meets every 5 years. The International

Hydrographic Organization (IHO) and IOC sponsor a Joint IOC/IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), which includes a Subcommittee on Geographical Names and Nomenclature of Ocean Bottom Features, which participates in the Conference on the standardization of maritime and undersea features names. In addition, the U.N. has many councils, committees, and specialized and affiliated agencies that have interests in the marine sciences. These are described in entries 2 through 15.

2. U.N. GENERAL ASSEMBLY: UNGA

Representatives of U.N. member nations compose the General Assembly, which meets in regular annual sessions and may hold special sessions when necessary. UNGA concerns itself with any matter falling within the scope of the U.N. charter and may make recommendations on all issues except those on the agenda of the Security Council.

UNGA's immediate interests in marine affairs generally relate to legal and jurisdictional problems concerning the use of the seabed beyond the limits of national jurisdiction. In 1967 it established an Ad Hoc Committee to Study the Uses of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction. By resolution of UNGA in 1968, the Ad Hoc Committee was made a standing committee and renamed the Committee on the Peaceful Uses of the Sea-Bed and the Ocean Floor Beyond the Limits of National Jurisdiction. Commonly known as the U.N. Seabed Committee, its major activity is the preparation for and convening of the Law of the Sea Conferences (LOSC), also called the U.N. Conferences on the Law of the Sea (UNCLOS), the third of which opened in Caracas, Venezuela, in 1974. An Informal Single Negotiating Text (ISNT) was developed at the third session in 1975. It was superseded in 1976 by a Revised Single Negotiating Text (RSNT), which in turn was superseded in 1977 by an Informal Composite Negotiating Text (ICNT). One of the measures considered at this Conference was the U.N. proposal for an International Seabed Resource Authority (ISRA) for the orderly management and fair-sharing of seabed resources beyond the limits of national jurisdiction.

3. ECONOMIC AND SOCIAL COUNCIL OF THE UNITED NATIONS: ECOSOC

Under the authority of the General Assembly, ECOSOC is responsible for the initiation and development of U.N. economic and social programs. It receives and reviews the programs proposed by the Advisory Committee on the Application of Science and Technology to Development (ACAST). It is also responsible for the United Nations Development Program (UNDP), the United Nations Children's Fund (UNICEF), the United Nations Institute for Training and Research (UNITAR), and the several U.N. regional economic commissions.

4. ADMINISTRATIVE COMMITTEE ON COORDINATION: ACC

Executive heads of the many U.N. organizations compose ACC. Its functions include the proposing of programs to be sponsored by U.N. or its organizations, including programs in the marine sciences and those in the United Nations Environment Program (UNEP). A recently abolished Subcommittee on Marine Science and Its Applications had cognizance over marine science activities.

5. ADVISORY COMMITTEE ON THE APPLICATION OF SCIENCE AND TECHNOLOGY TO DEVELOPMENT: ACAST

ACAST is the central body in the U.N. system charged with the entire range of the application of science and technology in the development stage. Scientific and technological programs and projects

proposed for consideration by U.N. or one of its organizations are submitted to ACAST for review. ACAST also establishes priorities, looks for duplication of effort, and, when necessary, recommends measures for improvement of programs.

6. UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT: UNCTAD

Established in 1965, UNCTAD includes committees concerned with development and efficiency of marine transportation, economic and commercial aspects of ocean shipping and ports, transfer of technology relating to the marine environment to developing countries, and effect on developing countries of marine mineral production.

7. UNITED NATIONS DEVELOPMENT PROGRAM: UNDP

Established under ECOSOC in 1956, UNDP assists the lower income countries to expand their economies through support of projects designed to attract development capital, train skilled manpower, and apply modern technologies needed for improvement and expansion. In cooperation with FAO, UNDP is assisting in the development of about 125 projects relating to fishery development, including projects in individual countries, regional and interregional projects, and a global program in the Southern Ocean.

8. UNITED NATIONS ENVIRONMENT PROGRAM: UNEP

Established in 1973 upon recommendation of the U.N. Conference on the Human Environment (UNCHE), UNEP is also called the Stockholm Conference. UNCHE included two working groups that identified marine environment problems that were referred to UNEP. They were the Intergovernmental Working Group on Marine Pollution (IWGMP) and the Intergovernmental Working Group on Monitoring or Surveillance (IWGMS).

UNEP is under the aegis of the U.N. General Assembly (UNGA), which established a Governing Council comprising 54 members selected by UNGA on an equitable geographic distribution. Input to the Council was formerly provided by a recently abolished Environment Coordination Board (ECB) under the auspices of the Administrative Committee on Coordination (ACC). UNGA and ECOSOC review programs referred to UNEP.

UNEP initiated and maintains the International Referral System (IRS) for sources of environmental information. In January 1979, IRS was renamed INFOTERRA. It is coordinating several regional sea programs including the Mediterranean Action Plan (MAP) and the Mediterranean Pollution, Monitoring, and Research Program (MEDPOL), and was instrumental in establishing a Regional Oil Combating Center (ROCC) to combat massive oil pollution in the Mediterranean. In 1975 it established an Ecosystem Conservation Group (ECG) in which the IUCN, UNESCO, and FAO participate. In cooperation with UNESCO, UNEP is developing a Register of Rivers Discharging into the Oceans (RRDO).

9. INTERNATIONAL COURT OF JUSTICE: ICJ

Established in 1946, the Court deals with cases including those pertaining to fishery jurisdiction, the continental shelf, and other marine affairs. It delivered an advisory opinion on the composition of IMCO's Maritime Safety Committee.

10. INTERNATIONAL LAW COMMISSION: ILC

Established in 1949, ILC is a permanent subsidiary body of UNGA responsible for promoting the progressive development of international law and its codification. It participates in the Law of the Sea

Conference by drafting articles on the territorial sea and contiguous zones, the high seas, fishing, and the continental shelf.

11. UNITED NATIONS INSTITUTE FOR TRAINING AND RESEARCH: UNITAR

Established in 1965, UNITAR, which reports to ECOSOC, is responsible for improving U.N. effectiveness by providing facilities for research and training. One of its areas of concern is global environmental problems; in 1970 it prepared "Marine Pollution Problems and Remedies" as a background study for the U.N. Conference on the Human Environment (UNCHE). It is currently concerned with studies on procedures and mechanisms for settling disputes over management of ocean resources and marine environmental problems.

12. REGIONAL ECONOMIC COMMISSIONS

Five regional commissions come under the general supervision of ECOSOC: The Economic Commission for Africa (ECA), Economic Commission for Europe (ECE), Economic Commission for Latin America (ECLA), Economic Commission for Western Asia (ECWA), and the Economic and Social Commission for Asia and the Pacific (ESCAP), formerly known as the Economic Commission for Asia and the Far East (ECAFE). Each is responsible for promoting the economic development of resources in its respective region. As the protection of the environment, including the marine environment, has become a major concern in recent years, each Commission has taken steps to prevent marine pollution in its respective region.

Another common concern, especially of ESCAP, is the exploration for mineral resources on offshore areas. ESCAP sponsors two Committees for Coordination of Joint Prospecting for Mineral Resources (CCOP): one in Asian offshore areas (CCOP/ESCAP) and the other for South Pacific offshore areas (CCOP/SOPAC). Membership on each committee is limited to the adjacent countries, and each is assisted by a Technical Advisory Group (TAG) composed of scientific advisers from developed countries both inside and outside the region.

ECLA established the Caribbean Development and Co-operation Committee (CDCC), which, among other activities, promotes the development of fisheries and transportation. CDCC is concerned with developing a common position among Caribbean states on the Law of the Sea.

13. UNITED NATIONS CHILDREN'S FUND: UNICEF

UNICEF helps lesser developed nations and administers long-range health, nutrition, and welfare programs for children and mothers. As a part of its program to advance nutrition, it seeks ways to provide sources of high-protein food and so encourages the development of fishpond programs and the production of fish protein concentrate (FPC).

14. UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION: UNIDO

Established in 1967, UNIDO provides assistance to developing countries in the promotion and acceleration of their industrialization. Among its activities are studies on fish processing, shipbuilding and related engineering studies, and environmental aspects of industries as they relate to marine pollution.

15. UNITED NATIONS SCIENTIFIC COMMITTEE ON THE EFFECTS OF ATOMIC RADIATION: UNSCEAR

Responsible to the U.N. General Assembly, UNSCEAR has among its concerns the effects of radioactive contamination of the marine environment.

16. FOOD AND AGRICULTURE ORGANIZATION: FAO

Established in 1945, FAO is responsible for raising levels of nutrition and standards of living of the peoples under the respective jurisdictions of its member nations, securing improvements in the efficiency of the production and distribution of all food and agricultural products including fishery products, bettering conditions of rural populations, contributing to an expanding world economy, and ensuring humanity's freedom from hunger. It sponsors the Perspective Study of World Agricultural Development (PSWAD) and plays a major role in international marine science activities as they relate to fishing and the fishing industry.

Within FAO headquarters is a Department of Fisheries, which, among its many duties, is responsible for extensive bibliographic work and maintenance of the FAO Fishery Data Centre (FCD). FAO, with the cooperation of IOC, was responsible for development of the Aquatic Sciences and Fisheries Information System (ASFIS). (See entry 230.)

Other components of FAO are described in entries 17 through 20.

17. ADVISORY COMMITTEE ON MARINE RESOURCES RESEARCH: ACMRR

Established in 1963 as an FAO body, ACMRR advises the FAO Director General on the formulation and execution of programs concerned with marine resource research and advises IOC on fishery oceanography. It is the FAO body responsible for international programs, projects, and policies relating to marine sciences. It meets with other international organizations involved with similar programs. The Committee has 13 members from FAO member states. When acting as IOC adviser, its members are increased by two persons appointed from states that are not members of FAO.

18. EXPERT PANEL FOR THE FACILITATION OF TUNA RESEARCH: EPFTR

Established in 1964 upon recommendations made at the FAO Scientific Conference on the Biology of Tuna and Related Species, the Panel operates much like ACMRR, but is highly specialized.

19. COMMITTEE ON FISHERIES: COFI

Established in 1966 as an FAO standing committee, COFI comprises senior fishery officials from 34 member nations who are elected by the Council in such a manner that representation is assured for nations having special interests in fisheries and for nations having interests in different areas of the oceans. COFI meets annually to review the work program of the Department of Fisheries, to consider fishery problems of an international character, and to promote international cooperation in fisheries.

20. FAO REGIONAL FISHERIES COMMISSIONS, COMMITTEES, OR COUNCILS

FAO sponsors regional fisheries organizations established throughout the world. Each organization is responsible for advising FAO on fishery programs in its respective area, for encouraging national and regional programs of cooperative action in the investigation and management of fishery resources, for encouraging training and proper assignment of fishery personnel, and for assisting in the collection and dissemination of data. The regional organizations, their initialisms, and dates of establishment are:

Committee for Inland Fisheries of Africa. CIFA. 1971.
European Inland Fisheries Advisory Commission. EIFAC. 1957.
Fishery Committee for the Eastern Central Atlantic. FCECA. (Also known by the acronym CECAF for Committee for Eastern Central Atlantic Fisheries.) 1967.
General Fisheries Council for the Mediterranean. GFCM. 1949.
Indian Ocean Fishery Commission. IOFC. 1967.
Indo-Pacific Fisheries Commission. IPFC. 1968.
International Commission for the Southeast Atlantic Fisheries. ICSEAF. 1972.
Southwest Atlantic Fisheries Advisory Commission. SWAFAC. (More commonly known by the initialism CARPAS for Comision Asesora Regional de Pesca para el Atlantic Sud-Occidental). 1961.
Western Central Atlantic Fishery Commission. WECAFC. 1974.

A Regional Fisheries Commission for Western Africa (RFCWA) has been proposed. FAO also was responsible for negotiating the convention for the establishment of the International Commission for the Conservation of Atlantic Tuna (ICCAT), an independent, regional, and specialized fishery organization.

21. UNITED NATIONS EDUCATIONAL, SCIENTIFIC, AND CULTURAL ORGANIZATION: UNESCO

Organized in 1945 to promote collaboration among nations in education, science, and culture, UNESCO is the parent agency for the Intergovernmental Oceanographic Commission (IOC), which promotes cooperation in the marine sciences and is described in greater detail in entry 22. Within UNESCO headquarters is a Division of Marine Sciences (formerly the Office of Oceanography). Before the establishment of IOC, UNESCO sponsored the International Advisory Committee on Marine Sciences (IACOMS), created in 1955 to consider the U.N. role in marine sciences. IACOMS, comprising nine persons appointed as representatives of the different areas of the world, was severely handicapped: it had no charter or authority and was limited in funds. It did, however, focus attention on marine sciences and was instrumental in recommending the establishment of IOC.

Proposals have been made to remove IOC from UNESCO and create an independent U.N.-affiliated agency to handle marine sciences at the international level, much as the World Meteorological Organization (WMO)is responsible for meteorological activities at the international intergovernmental level. While such proposals have yet to materialize, a title, World Oceanographic Organization (WOO), has been suggested.

UNESCO, through its Division of Marine Sciences, is involved in a number of activities to strengthen marine research and marine institutions in its member states, to improve understanding of basic marine systems, and to disseminate information. During the 1960's and early 70's UNESCO established and supported the operation of three regional biological sorting centers: the Mexican Oceanic Sorting Center (CPOM), the Indian Ocean Biological Center (IOBC), and the Regional Marine Biological Center (RMBC) in Singapore. These were established in conjunction with IOC cooperative investigations, and UNESCO sponsored an Advisory Panel for International Marine Biological Centers to ensure the standardization of operating techniques and to provide guidance in the selection of specialists working on fraction collections.

UNESCO, as well as IOC, lends financial support to such organizations as SCOR, which in turn offer scientific advice on specific research aspects of UNESCO's and IOC's programs. They also provide financial support to other international organizations by helping pay travel expenses of scientists from developing countries who attend symposia and conferences.

Under its publications program the Division of Marine Sciences issues a quarterly title, the International Marine Science (IMS) Newsletter to inform scientists and administrators of recent developments in marine science activities of U.N. agencies.

UNESCO also supports Regional Offices of Science and Technology (ROST). Two in particular, the Regional Office of Science and Technology for Latin America and the Caribbean (ROSTLAC), formerly called the Regional Office of Science and Technology for Latin America (ROSTLA) and before that the Latin American Science Cooperation Office (LASCO) and that for Southeast Asia (ROSTSEA), formerly called the Southeast Asia Science Cooperation Office (SEASCO), have participated in the development of plans for oceanographic programs in their respective regions. Other regional offices are Africa (ROSTA), the Arab States (ROSTAS), and South and Central Asia (ROSTSCA). UNESCO is responsible also for organizing Conferences of Ministers Responsible for the Application of Science and Technology to the Development of the Arab States (CASTARAB), of Asia (CASTASIA), and of Africa (CASTAFRICA).

22. INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION: IOC

The 1960 Intergovernmental Conference on Oceanographic Research (ICOR), sponsored by UNESCO, included a recommendation for the establishment of the Intergovernmental Oceanographic Commission (IOC) to act as the international body responsible for coordination of all scientific investigations of the oceans by the states concerned and the international organizations. IOC was established later in 1960 by the General Conference of UNESCO and held its first session in October 1961.

The Assembly of IOC, which now includes members from 101 nations, meets every 2 years. Before 1971, its policy and programing activities were handled between sessions by the Bureau and Consultative Council (IOC/BCC); since a reorganization in 1971, the Consultative Council has been discontinued and an elected Executive Council (IOC/EC) comprising a chairman, four vice-chairmen, and eight delegates from member states performs these functions. In 1975 it established a Scientific Advisory Board (SAB) to improve its ocean science activities and develop priorities to avoid spreading its limited resources too thinly. Originally established for a 2-year experimental period, the life of SAB was extended for another 2-year period until IOC held its 11th session in October and November 1979. At that meeting, IOC established a Scientific Review Board (SRB) to replace SAB.

Other activities of IOC are handled by working committees, international coordination groups, and groups of experts. Among these, the Group of Experts on Long-Term Scientific Policy and Planning (GELTSPAP), now abolished, was established in 1969 to develop the scope, content, and criteria for the assignment of priorities for the Long-Term and Expanded Program of Oceanic Exploration and Research (LEPOR) and to find ways of interrelating projects relevant to LEPOR that are being conducted by other international bodies. A Working Group of Experts on Pollution of the Ocean Originating on Land (POOL), established in 1974 as part of the Global Investigations of Pollution in the Marine Environment (GIPME), was dissolved in 1975

upon acceptance of its recommendations. A Working Group on Legal Questions Related to Scientific Investigations in the Oceans (LEG) has also been dissolved.

International Coordination Groups (ICG's) are responsible for coordinating international marine expeditions, projects, or programs supported by IOC including the Cooperative Investigations of the Mediterranean (CIM), now in abeyance; the Cooperative Investigations of the Northern Part of the Eastern Central Atlantic (CINECA), now terminated; the Tsunami Warning System in the Pacific (ITSU); and the Southern Oceans Study (SOC). In 1975, upon completion of the program, the ICG for the Cooperative investigations of the Caribbean and Adjacent Regions (CICAR) was disbanded and replaced by an IOC Regional Association for the Caribbean and Adjacent Regions (IOCARIBE). IOCARIBE was established on an experimental basis for a 6-year period. It will continue to develop the regional cooperation in the marine sciences instituted by CICAR over its 7-year program. In 1977 the ICG for the Cooperative Investigations of the Kuroshio and Adjacent Regions (CSK) was terminated and replaced by a Working Group for the Western Pacific (WESTPAC), which in cooperation with CCOP, CCOP/SOPAC, SEATAR, and others, is developing plans to continue scientific investigations in the Western Pacific.

IOC includes a number of working committees. One, the Working Committee on International Oceanographic Data Exchange (IODE), is primarily responsible for arranging for the exchange of data and information. IODE's subsidiary bodies include Groups of Experts on such arrangements as the Marine Environmental Data Information Referral System, (MEDI) designed to complement but not duplicate the Aquatic Sciences and Fisheries Information System (ASFIS) by providing descriptions of organizational sources for marine information and descriptions of coherent data files. Another group of experts developed the concept of the Responsible National Oceanographic Data Center (RNODC). An ad hoc group called Marine Information Management (MIM) coordinates IODE's activities.

In 1976 the Working Committee on Training, Education, and Mutual Assistance in Marine Sciences (TEMA) established a Voluntary Assistance Program (IOC/ VAP) similar to that developed by the World Meteorological Organisation (WMO). IOC's Working Committee for the Integrated Global Ocean Station System (IGOSS) was superseded in 1977 by the Joint IOC/WMO Working Committee for IGOSS. The Working Committee on Global Investigations of Pollution in the Marine Environment (GIPME) supersedes an International Coordination Group for GIPME. GIPME includes a Group of Experts on Methods, Standards, and Intercalibration (GEMSI). IOC is also responsible for general programs and policies of the International Tsunami Information Center (ITIC) in Honolulu, Hawaii.

IOC participates with other international organizations in developing programs and projects. With these organizations it forms Joint International Coordination Groups (JICGs) and Joint Groups of Experts (JGEs), several of which are described under entries 35 to 39.

23. WORLD HEALTH ORGANIZATION: WHO

Established in 1948 to promote the highest possible level of health for all peoples, WHO is actively concerned with the study of and control of ocean contamination, particularly in the coastal zone, and studies of shellfish contamination and the effects of contamination in coastal recreation areas. It is also responsible for the establishment of international standards for Fish Protein Concentrate (FPC).

24. INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT: IBRD

Established in 1945 and commonly called the World Bank, IBRD is empowered to lend funds to facilitate international trade, raise living standards, finance productive investments when private capital is not available, and provide technical assistance to developing countries. It lends assistance and capital for fishery programs, for improvement of maritime safety, for port and coastal developments, and exploration and use of marine mineral resources.

In view of the emphasis on the protection of the environment, an Office of the Environmental Adviser was created in 1970 within IBRD to examine projects proposed for funding in order to detect in advance and either cancel or modify projects that might adversely affect the environment.

25. INTER-GOVERNMENTAL MARITIME CONSULTATIVE ORGANIZATION: IMCO

Established in 1959, IMCO is mainly concerned with maritime safety and coordinates work relating to atomic propulsion, aviation, health, labor, meteorology, oceanography, and telecommunications. Since the Torrey Canyon sinking in 1967, it has been especially concerned with oil pollution of the seas and collects and disseminates technical information on oil pollution, sets standards for the shipment of oil and the prevention of oil spills, and sponsors conventions on these matters. It has also been asked to be concerned with the prevention of pollution caused by all discharges from sea-going vessels. Its Marine Environment Protection Committee (MEPC) has cognizance over matters pertaining to oil spills and other aspects of marine pollution.

In 1976 the International Conference on the Establishment of an International Maritime Satellite System (INMARISAT) concluded an agreement to establish under the auspices of IMCO an International Maritime Satellite Organization (INMARSAT) that will administer a worldwide system for maritime communications.

IMCO is also concerned with and has developed programs concerned with Safety of Life at Sea (SOLAS). Together with IHO it is developing a Worldwide Radio Navigation Warning System (WRNWS) for the rapid dissemination of navigational data on an organized international cooperative basis.

26. INTERNATIONAL CIVIL AVIATION ORGANIZATION: ICAO

Established in 1947 to develop principles and techniques for international air navigation, ICAO was also responsible for supervising the North Atlantic Ocean Stations (NAOS) agreement under which a network of multination ocean weather observation ships provided weather information, search and rescue aid, navigation, and communication services to aircraft flying across the ocean. By agreement, NAOS vessels also made oceanographic observations. In 1974, the program was severely curtailed and responsibilities for its continuation were transferred to the World Meteorological Organization.

27. WORLD METEOROLOGICAL ORGANIZATION: WMO

Formally established in 1951, WMO succeeded the International Meteorological Organization (IMO), a nongovernmental organization established in 1873 and abolished in 1951. Shortly after it was established, WMO was recognized as a U.N. specialized agency.

WMO's broad responsibilities include the coordination, standardization, and improvement of meteorological services throughout the world. Marine meteorology is an especially important service, and international interests in marine meteorology date back to the

first International Meteorological Conference of 1853, which concerned itself with providing a program of oceanic weather observations. This conference is not only considered the predecessor to IMO, but a forerunner in the field of international cooperation.

WMO also operates a Voluntary Assistance Programme (VAP) to assist developing countries. Under this program, the developing countries are granted scholarships for job training, offered the aid of experts, provided training courses, and encouraged to participate in research campaigns falling in their geographic area or appropriate in subject matter.

WMO's committees, commissions, and associations are described in entries 28 through 31.

28. WMO COMMITTEES

Overall policy and administrative matters are handled by an Executive Committee comprising heads of 24 national meteorological services. The Executive Committee meets at least once a year to conduct the activities of the organization; review, coordinate, and implement programs; and study and make recommendations on matters affecting international meteorology and the operation of meteorological centers. The Executive Committee establishes panels of experts to review special topics as needed. One of these, the Executive Committee's Panel on Meteorological Aspects of Ocean Affairs (MAOA), was originally created in 1968 to review and provide advice to the Executive Committee on the coordination of meteorological programs with oceanographic programs. In 1976 a resolution was adopted to combine the functions of MAOA with those of the Advisory Committee on Oceanic Meteorological Research (ACOMR) into a new Panel, also called the Executive Committee's Panel on Meteorological Aspects of Ocean Affairs (MAOA). The new Panel's responsibilities are to serve as an advisory body both to WMO and to the Intergovernmental Oceanographic Commission (IOC). Another, the Executive Committee's Panel of Experts on Climatic Change (PECC), is concerned with the effect of the world's oceans on climatic changes and has given high priority to the collection of time series of marine meteorological and oceanographic data. Its Panel of Experts on Environmental Pollution (PEEP) is promoting programs for the development of techniques to measure pollutants and the development of programs to measure specific pollutants. It is especially concerned with monitoring pollutants in open ocean waters and the exchange of data.

WMO has other advisory committees whose functions are to advise the Executive Committee on matters affecting two or more of the specialized commissions. One of these is the Advisory Committee on Operational Hydrology (ACOH), which also serves as an international body through which national hydrological services can advise WMO.

29. WMO COMMISSIONS

Eight specialized commissions form the main body of WMO and are:

1. Commission for Aeronautical Meteorology: CAeM
2. Commission for Agricultural Meteorology: CAgM
3. Commission for Atmospheric Sciences: CAS
4. Commission for Basic Systems: CBS
5. Commission for Hydrology: CHy
6. Commission for Instruments and Methods of Observation: CIMO
7. Commission for Marine Meteorology: CMM
8. Commission for Special Applications of Meteorology and Climatology: CoSAMC

CMM, the most significant of the commissions in respect to marine sciences, has its antecedents in the previously mentioned Conference of 1853. (See entry 27.) It is responsible for the improvement of weather services to the marine community, including the collection of meteorological data for use in preparing forecasts and warnings, the organization of meteorological networks for observations at sea, and the promotion of studies of the meteorological aspects of ocean waves and sea ice.

CAS, in view of its research in air/sea interaction, has the additional responsibility as a source of advice on meteorological aspects of oceanic research. CBS and CIMO are also of interest to marine scientists: CBS is charged with assuring optimism procedures for handling data and CIMO with improving data acquisition and communication. CHy is of peripheral interest and recently developed the Integrated Operational Hydrological System (IOHS) to service water rsources management programs and projects in need of a real-time and/or historical design data base. It is also responsible for WMO's Operational Hydrology Programme (OHP).

30. WMO SPECIALIZED COMMITTEES

Specialized committees are established within WMO as needed to handle special tasks or programs. Among the present committees are the GARP Joint Organizing Committee (JOC), which also includes membership from the International Council of Scientific Unions (ICSU); the Tropical Experimental Board (TEB) comprising representatives from WMO member countries who have signified their intention to contribute substantially to the GARP Atlantic Tropical Experiment (GATE) and which acts as the central international body for planning and implementing GATE; and the Tropical Experimental Council (TEC), composed of representatives from member governments whose territories or territorial waters extend into the GATE region and other member governments that plan to contribute to GATE, which is responsible for implementing and reviewing the GATE program. (See entry 347.)

31. WMO REGIONAL ASSOCIATIONS

Six Regional Associations, composed of member governments, coordinate meteorological activities with the respective geographical regions and examine from the regional point of view all questions referred to them. The Regional Associations are:

RA I: Africa
RA II: Asia
RA III: South America
RA IV: North and Central America
RA V: South West Pacific
RA VI: Europe

32. INTERNATIONAL TELECOMMUNICATIONS UNION: ITU

ITU was established in 1865 as the Union Telegraphique Internationale (UTI) and renamed the International Telecommunications Union in 1932. In 1947 ITU became a U.N. specialized agency charged with promoting international cooperation in telecommunications. It promotes the rapid transmission of oceanographic and meteorological data from ocean stations, which are allocated frequencies for their exclusive use by the International Frequency Registration Board (IFRB), a subsidiary of ITU.

33. INTERNATIONAL ATOMIC ENERGY AGENCY: IAEA

An autonomous agency in the U.N. system, IAEA was established in 1957 to promote and develop atomic energy for peaceful purposes and to undertake any service or operation useful in the research and development of the peaceful uses of atomic energy. It also maintains a continuous program on all aspects of radioactive pollution caused by the peaceful uses of atomic energy and has provided detailed guidance, at the international level, for the controlled disposal of toxic waste material at sea.

In 1961, in view of its concern with radioactive fallout in the marine environment, it established a special laboratory in Monaco, the International Laboratory of Marine Radioactivity (ILMR). It participates with other international organizations having similar concerns and cooperates with FAO in a program on using radioactivity to preserve food fish.

In 1970, it established the International Nuclear Information System (INIS). The major purpose of INIS is the creation of a file on the peaceful uses of atomic energy; in addition, a subsystem on environmental aspects of nuclear programs is being developed. With the assistance of WMO, IAEA is compiling a safety guide devoted to coastal sitings of nuclear powerplants. The guide will include methods and models to be used in the determination of high seawater levels caused by storm surges, water setup and runup, and related phenomena.

34. INTERNATIONAL LABOR ORGANIZATION: ILO

Established in 1919, ILO is concerned with working conditions in coastal areas and on the high seas. The control of marine environmental pollution is a major concern, and ILO participates with other international organizations working on pollution.

Joint United Nations Groups

35. FAO/IOC JOINT PANEL OF EXPERTS ON THE AQUATIC SCIENCES AND FISHERIES INFORMATION SYSTEM

Established in 1975, the Joint Panel advises the secretariats of the sponsoring agencies of the Aquatic Sciences and Fisheries Information System (ASFIS) on the policy, development, and implementation of an effective international system for scientific and technical information in marine and freshwater science and technology.

36. INTER-SECRETARIAT COMMITTEE ON SCIENTIFIC PROGRAMMES RELATING TO OCEANOGRAPHY: ICSPRO

Created in 1969 and composed of executive heads of several U.N. organizations (specifically FAO, IMCO, UNESCO, and WMO) having interests in marine sciences, ICSPRO serves as a committee on interagency cooperation in marine sciences and the development of scientific programs in oceanography.

37. JOINT CCOP/IOC GROUPS

The Intergovernmental Oceanographic Commission (IOC) and the Economic and Social Commission for Asia and the Pacific (ESCAP) Committee for the Coordination of Joint Prospecting for Mineral Resources in Asian Offshore Waters (CCOP) are cooperating in two joint programs. One, called the CCOP/IOC Joint Working Group on IDOE Studies in East Asia Tectonics and Resources (SEATAR), originally called the CCOP/IOC Joint Working Group on East Asia Transects, met for the first time in 1975 to formulate the program. The other, a Program of Research for the South Pacific (SOPAC), is in the planning stages.

38. GROUP OF EXPERTS ON THE SCIENTIFIC ASPECTS OF MARINE POLLUTION: GESAMP

A joint FAO, IAEA, IMCO, UN, UNEP, UNESCO, WHO, and WMO group, GESAMP was established in 1969 to provide advice on the scientific and technical aspects of marine pollution problems and to develop proposals for cooperative programs of action with respect to pollution monitoring and control. GESAMP comprises specialized experts from several interested U.N. agencies.

GESAMP's responsibilities include the gathering of scientific data. It recently developed an International Maritime Dangerous Goods (IMDG) code to unify reporting techniques.

39. JOINT IOC/WMO WORKING COMMITTEE FOR IGOSS

IGOSS is supervised by the Joint IOC/WMO Working Committee for IGOSS. This Joint Committee replaced both the IOC working committe for IGOSS and the Joint IOC/WMO Planning Group for IGOSS (IPLAN). The former Joint IOC/WMO Group of Experts superseded the IOC Group of Experts on Oceanographic Research as it relates to IGOSS (IRES), and the Joint IOC/WMO Group of Experts on IGOSS Technical Systems, Design, Development Service Requirements (ITECH), and on Telecommunication (ITEL).

The Joint Committee includes three subgroups approved by its first session in 1978. They are the Sub-Group of Experts on Marine Pollution Monitoring (MARPOLMON), the Sub-Group of Experts on Scientific Matters related to IGOSS, and the Sub-Group of Experts on Operations and Technical Applications.

Independent Organizations

40. ASIAN-AFRICAN LEGAL CONSULTATIVE COMMITTEE: AALCC

Established originally by Asian countries in 1956, AALCC accepted the participation of African countries in 1958. It serves as an advisory body of legal experts to its member countries in matters involving international law and as such is involved with the Law of the Sea Conference, especially with those issues pertaining to the economic zone and to archipelagos.

41. ASSOCIATION OF SOUTHEAST ASIAN NATIONS: ASEAN

Established in 1967 to promote economic growth, cooperation, and mutual education for its member states, Indonesia, Malaysia, Republic of the Philippines, Singapore, and Thailand. It sponsors many projects relating to fishery research and education.

42. BALTIC SEA SALMON STANDING COMMITTEE: BSSSC

Established in 1966, BSSSC fosters the development of salmon stocks, fish-breeding methods, and the rational use of the salmon population. Members are Denmark, the Federal Republic of Germany, Poland, and Sweden.

43. CARIBBEAN COMMUNITY: CARICOM

Established in 1973, CARICOM's programs include the development of fisheries and the shipping industry among the member states.

44. CARIBBEAN ORGANIZATION

Founded in 1942 and known successively as the Anglo-American Caribbean Commission (1942-46), the Caribbean Commission (1946-60), and the Caribbean Organization (1960-65), it ceased operations in 1965. Its goal was to promote research in areas of common interest,

including fisheries. In 1962, it established a Standing Advisory Committee on Fisheries (SAFCO) to coordinate fishery research, development, and training.

45. CENTRAL TREATY ORGANIZATION: CENTO

Organized in 1955 as the Middle East Treaty Organization, and renamed the Central Treaty Organization in 1959, CENTO promotes research in areas of mutual interest, including marine sciences. Member nations are Iran, Pakistan, Turkey, and the United Kingdom.

46. COLOMBO PLAN COUNCIL FOR TECHNICAL COOPERATION IN SOUTH AND SOUTHEAST ASIA

Established in 1950, the Council administers the Colombo Plan, which provides for promoting the economic development of south and southeast Asia, including the development of marine resources, by providing technical assistance in the form of training facilities, expert advice, and equipment.

47. COMMISSION FOR FISHERIES RESEARCH IN THE WESTERN PACIFIC

Established in 1956 by treaty, the Commission plans joint research and exploration, exchanges information, and provides conservation measures to protect fishery resources. Member nations are the People's Republics of China, Mongolia, North Korea, Vietnam, and the Union of Soviet Socialist Republics.

48. COMMISSION ON FISHING AND CONSERVATION OF THE LIVING RESOURCES IN THE BALTIC SEA AND THE BELTS

Proposed by the International Council for the Exploration of the Sea (ICES), the Commission was ratified by the member nations and formally established in 1974. Its objectives include promotion of the renewal of living resources, collection of necessary data, coordination of scientific research, and development of methods to prevent pollution.

49. CONFERENCE OF MINISTERS OF ARAB STATES RESPONSIBLE FOR THE APPLICATION OF SCIENCE AND TECHNOLOGY TO DEVELOPMENT: CASTARAB

Organized in 1976 under the leadership of UNESCO, CASTARAB meets every 3 years to discuss outstanding science and technology issues in the Arab world and to consider cooperative programs. At its first meeting the ministers endorsed a regional project for marine science studies of the Persian Gulf.

50. COORDINATING COMMITTEE ON GREAT LAKES BASIC HYDRAULIC AND HYDROLOGIC DATA: CCGLBHHD

Established in 1953, CCGLBHHD studied the problem of establishing a base for the development and acceptance by Canada and the United States for coordinated hydraulic and hydrologic data for the Great Lakes.

51. COUNCIL FOR MUTUAL ECONOMIC ASSISTANCE: CMEA

Established in 1949 to promote and coordinate planned development of the economics of its member governments, CMEA has recently expanded its interests to include an awareness of the human environment and is especially concerned with protecting water resources and the development of fisheries. Member governments are Albania, Bulgaria, Czechoslovakia, the Democratic Republic of Germany, Hungary, Mongolia, Poland, Romania, the Union of Soviet Socialist Republics, and Yugoslavia.

52. COUNCIL OF EUROPE: CE

Originated in 1949, CE concerns itself with problems of interest to its member nations and sponsors meetings and symposia regarding these concerns, one of which is the protection of international waterways from pollution; another is the legal issues concerning the use of the seabed and its subsoil. In 1970 its members proposed the establishment of the European Ocean Space Commission to unify interests of the nations of Western Europe in the scientific aspects of ocean activities.

53. EAST AFRICAN COMMUNITY: EAC

Established in 1962 as the East African Common Services Organization, EAC had its name changed to East African Community in 1967. Problems and activities common to its members were its concerns until recent years, when it collapsed because of political unrest. Marine activities were the responsibility of the East African Marine Fisheries Research Organization (EAMFRO), organized in 1953 to investigate the commercial sea fisheries of the East African coast and later made a part of EAC. From 1972 until it collapsed with EAC, EAMFRO was active in marine pollution research. It included a research staff and operated three research vessels. Participating countries were Kenya, Tanzania, and Uganda.

54. EAST ASIA HYDROGRAPHIC COMMISSION: EAHC

EAHC is an independent regional hydrographic commission established in 1971 and comprising chiefs of hydrographic offices or services of Burma, China, Indonesia, Japan, Philippines, and Thailand. Though independent, it operates within the framework of the International Hydrographic Organization (IHO).

55. EUROPEAN ATOMIC ENERGY COMMUNITY: EURATOM

Established in 1958, EURATOM contributes to the raising of standards of living in member states by promoting the development of nuclear industries. It also takes preventive measures to protect the environment, including the marine environment, from nuclear accidents and from the haphazard disposal of nuclear wastes.

56. EUROPEAN ECONOMIC COMMUNITY: EEC

Also called the "Common Market," EEC came into effect in 1958 following the ratification of a treaty by Belgium, France, Italy, Luxembourg, the Netherlands, and West Germany. Denmark, Ireland, and the United Kingdom joined it in 1973. Its purpose is to work toward a customs-free union and free flow of goods and services. It also takes an active interest in fishery research and fishing industries and includes the Cooperation Europeenne dans le Domaine de la Recherche Scientifique et Technique (COST), which concerns itself with oceanography, among other things; and a Consultative Committee on Fisheries which includes an Aquaculture Working Group (AWG). It sponsors the Association of Fish Industries of the EEC, known as AIPCEE for Association des Industries du Poisson de la CEE, founded in 1959; and EUROPECHE, the Association of National Organizations of Fishing Enterprises of the EEC, founded in 1962.

Other areas of concern of EEC are the development of a common fishery policy in the light of the creation of 200-mile economic zones, development of alternate energy sources using resources of the continental shelf, development of mineral resources of the continental shelf and the international seabed, and the prevention of marine pollution.

57. EUROPEAN SPACE AGENCY: ESA

Established originally in 1962 and reestablished in 1975 upon signature of a new convention, it promotes collaboration among European nations in space research and technology for peaceful purposes, such as remote sensing of estuarine and coastal waters. Recently it promoted the SEASAT Users Group of Europe (SURGE) to cooperate with U.S. agencies responsible for SEASAT.

58. GREAT LAKES FISHERY COMMISSION: GLFC

Established by the convention on Great Lakes fisheries ratified in 1955 by Canada and the United States, GLFC was activated in 1956 to develop coordinated programs of research in the Great Lakes and, on the basis of findings, to recommend measures that will permit the maximum sustained production of fish of common concern. It is also responsible for the project to formulate and implement a program to eradicate or reduce the sea lamprey population in the Lakes.

59. INTER-AMERICAN DEVELOPMENT BANK: IADB

Established in 1959, IADB has members from most of the autonomous countries in the Western Hemisphere and nonregional developed countries elsewhere that have joined solely as contributors of resources. IADB accelerates the economic development of its member states by guaranteeing loans and providing technical assistance and advice. Its programs include development of fisheries, the fishing industry, and ports; and the promotion of education and training. Its policies and guidelines include requirements related to the protection of the environment before projects are approved.

60. INTER-AMERICAN TROPICAL TUNA COMMISSION: IATTC

Originally founded in 1950 by convention between Costa Rica and the United States, IATTC now has six more members: Canada, France, Japan, Mexico, Nicaragua, and Panama. Ecuador, once a member, has since withdrawn. IATTC is responsible for studying the biology, ecology, and population dynamics of the tunas and related species of the eastern Pacific Ocean with a view to determining how fishing activities or other forces affect their natural abundance and for recommending appropriate conservation measures so that stocks of fish can be maintained at levels that will afford maximum sustained catches if or when the Commission's research show such measures to be necessary.

Investigations at sea and in the laboratory are made by a permanent, internationally recruited research staff operating under the direction of the Director of Investigations, who is responsible to the Commission. In 1976-77 it was an active participant in the IDOE/CUEA Joint II program to study currents and other phenomena off the coast of Peru.

61. INTERNATIONAL BALTIC SEA FISHERY COMMISSION: IBSFC

Established in 1974 to coordinate scientific research and to submit recommendations regarding the control of fishing; the regulations of fishing gear, the size limit of fish, closed seasons and area; the allocation of catch among member countries; and means of implementing and enforcing regulations. Member countries are Denmark, Federal Republic of Germany, Finland, German Democratic Republic, Poland, Sweden, and Union of Soviet Socialist Republics.

62. INTERNATIONAL COMMISSION FOR THE CONSERVATION OF ATLANTIC TUNAS: ICCAT

Though organized in 1966, ICCAT did not come into force until 1969. Its functions are to promote research on the stocks of Atlantic tunas and to recommend methods for their conservation. Member nations are Brazil, Canada, Cuba, France, Ghana, Ivory Coast, Japan, Korea, Morocco, Portugal, Senegal, South Africa, Spain, and the United States. While FAO was instrumental in organizing ICCAT, the Commission is an independent organization.

63. INTERNATIONAL COMMISSION FOR THE NORTH WEST ATLANTIC FISHERIES: ICNAF

Established by international convention in 1950, ICNAF helps investigate, protect, and conserve the fisheries of the Northwest Atlantic, west of longitude 42°W and north of latitude 39°N. It sponsors oceanographic investigations of fish stocks and proposes conservation measures. Its standing committees include the Standing Committee for Research and Statistics (STACRES) which provides advice on fishing conservation. Canada, United States, and a number of European countries were member countries. In 1977-78, both Canada and the United States withdrew their membership from ICNAF, because much of its responsibilities covered areas incorporated in the 200-mile Exclusive Economic Zone (EEZ) established by each country. Plans are currently being developed to replace ICNAF with a new organization known as the Northwest Atlantic Fisheries Organization (NAFO).

64. INTERNATIONAL COMMISSION FOR THE SCIENTIFIC EXPLORATION OF THE MEDITERRANEAN SEA: ICSEM

An intergovernmental regional scientific organization established in 1919, ICSEM promotes research in the Mediterranean and serves as a liaison between scientists and laboratories throughout the region. It was one of the sponsors of the Cooperative Investigations in the Mediterranean (CIM) Program, which is now in abeyance.

65. INTERNATIONAL COUNCIL FOR THE EXPLORATION OF THE SEA: ICES

Established in 1901, ICES is recognized as the oldest of the international regional organizations in the fields of oceanography and fishery research. Its prime area of interest is the northeastern Atlantic Ocean; it also has worldwide interest. Annual meetings are held. Through standing committees and working groups, it encourages various research connected with the exploration of the seas. It coordinates the marine science activities of its participating countries, which include most of the countries of Europe, Iceland, Canada, and, recently, the United States. It operates the Service Hydrographique, a center forming part of the World Data Center system and responsible for maintaining and servicing data from the ICES area of interest and data contributed by member countries. The Service Hydrographique acted as the Regional Data Center (RDC) for the recently terminated Cooperative Investigations of the Northern Part of the Eastern Central Atlantic (CINECA).

In addition, ICES is a scientific adviser to the International Commission for the Northwest Atlantic Fisheries (ICNAF); the Northeast Atlantic Fisheries Commission (NEAFC); and the Commission on Fishing and Conservation of the Living Resources in the Baltic Sea and the Belts, which was organized in 1974 at the recommendation of ICES.

In 1977, ICES established an Advisory Committee on Fishery Management (ACFM) comprising the chairmen of the several special committees

dealing with fisheries such as demersal or pelagic fisheries and Baltic fishing and representatives from national delegations who wish to participate.

66. INTERNATIONAL HYDROGRAPHIC ORGANIZATION: IHO

Organized in 1970 by ratification of the Convention on the International Hydrographic Organization, IHO legally assumed the international intergovernmental responsibilities formerly held by the International Hydrographic Bureau (IHB), which now serves as the administrative or headquarters facility for IHO.

IHB was founded in 1921, following a recommendation of the International Hydrographic Conference, to serve as a liaison between hydrographic services of the maritime countries. It coordinates the work of the national services, advises regional hydrographic organizations, endeavors to obtain uniformity in hydrographic documents, advances the science of hydrography, and facilitates the free exchange of hydrographic charts and information. It serves as the World Data Center for the collection of information on oceanic soundings taken outside the continental shelf. Under the direction of the Joint IOC/IHO Guiding Committee for the General Bathymetric Chart of the World (GEBCO), it is responsible for coordinating the compilation of master plotting sheets on a scale of 1:1,000,000 that are prepared by member countries on an assigned area basis; these form the basis of GEBCO, which is published in 18 sheets on a scale of 1:10,000,000.

The International Hydrographic Convention (IHC) held every 4 years, serves as the convention for representatives of the various hydrographic services. Policy matters to be administered by IHB are established by the Convention.

67. INTERNATIONAL ICE PATROL: IIP

After the sinking of the SS Titanic in 1912, following its collision with an iceberg, an International Conference for Safety of Life at Sea was held. It recommended the establishment of IIP, which, by agreement, is managed by the United States.

The task is the assigned responsibility of the U.S. Coast Guard (USCG), which patrols the shipping lanes and warns of dangers from icebergs. It also makes scientific studies of currents and ice drifts and takes standard oceanographic observations in the assigned area in the vicinity of the Great Banks of Newfoundland, Baffin Bay, and the Labrador Sea.

68. INTERNATIONAL JOINT COMMISSION: IJC

A permanent body organized in 1911, IJC carries out the provisions of the Boundary Waters Treaty of 1909 to prevent disputes over and solve common problems relating to boundary waters between Canada and the United States, especially in the Great Lakes area. Current IJC investigations include regulation of Great Lakes levels, studies of pollution, and supervision of the operation and maintenance of the St. Lawrence Seaway and Power Project. Two advisory boards, established by IJC, report on the extent of pollution in their respective areas and recommend control measures. They are the International Lake Erie Water Pollution Board (ILEWPB) and the International Lake Ontario and St. Lawrence River Water Pollution Board (ILOSLRWPB).

69. INTERNATIONAL NORTH PACIFIC FISHERIES COMMISSION: INPFC

Convened in 1953 following the 1952 International Convention for the High Seas Fisheries of the North Pacific Ocean, INPFC is

responsible for promoting and coordinating scientific studies necessary to ascertain the conservation measures required to secure the maximum sustained productivity of fisheries of joint interest to the three participating countries: Canada, Japan, and United States.

70. INTERNATIONAL PACIFIC HALIBUT COMMISSION: IPHC

Established in 1925 under the terms of the 1923 Convention between Canada and the United States, IPHC has been responsible for scientific investigations and regulation of stocks of the Pacific halibut, development of stocks to levels that will permit maximum sustained yields, and for maintaining stocks at the maximum level. After the passage in 1976 of the Fisheries Conservation and Management Act, the U.S. was required to renegotiate the terms of the agreement and gave formal notice to withdraw from IPHC. A protocol to amend the convention was later agreed on by the United States and Canada, however, and IPHC functions as before.

71. INTERNATIONAL PACIFIC SALMON FISHERIES COMMISSION: IPSFC

Established in 1937 by Canada and the United States, IPSFC aims to preserve, protect, and extend the fisheries for sockeye and pink salmon of the Fraser River and its tributaries.

72. INTERNATIONAL WHALING COMMISSION: IWC

Though agreements to restrict whaling had been signed by several of the whaling nations in 1937 and 1938, IWC was not formed until 1946. Its missions are to preserve the world's stock of whales, sponsor research on whales, and establish regulations to protect stocks.

According to the terms of the Convention, IWC maintains a special relationship with the Bureau of International Whaling Statistics (BIWS), established in 1929 upon recommendation of the International Council for the Exploration of the Sea (ICES). Wholly maintained by the Norwegian Government, BIWS publishes statistics on whaling throughout the world.

73. JAPAN-CHINA JOINT FISHERIES COMMISSION: JCFC

Established in 1975, JCFC recommends conservation measures, exchanges data, and studies fishery resources in the Yellow and East China Seas.

74. JAPAN-KOREA JOINT FISHERIES COMMISSION: JKFC

Established in 1965, JKFC recommends scientific investigations and conservation measures including provisional regulatory measures.

75. JAPANESE-SOVIET FISH COMMISSION: JSFC

Established in 1956, JSFC regulates catches in the northwestern Pacific Ocean, coordinates joint scientific research programs, and organizes international efforts at enforcing regulations.

76. JOINT PANEL FOR NORDIC/IHD COOPERATION: NUTSAM

Organized in 1967 and comprising the secretaries of the five Nordic national committees for the International Hydrological Decade (IHD), NUTSAM acts as the coordinating body for the free exchange of ideas and the evaluation of proposed projects. It is responsible for the preparation of a regional position on Nordic hydrology and plans and conducts symposia and conferences. In 1970, it founded the Nordic Hydrological Association (NHA).

77. LEAGUE OF ARAB STATES: LAS

Established in 1945, LAS coordinates activities of the Arab states in political, economic, financial, and health matters. It is currently concerned with developing programs relating to marine pollution control and the development of related training programs. It lent its support to IMCO and UNDP in the establishment of the Arab Maritime Transport Academy.

In 1964 it organized the Arab Educational, Cultural, and Scientific Organization (ALECSO). One of ALECSO's major programs is the environmental study and protection of the Red Sea and Gulf of Aden. Plans for the programs were proposed in 1974 and formalized in 1976 with the signing of the Jidda Declaration committing the member countries to ensure the proper scientific development and protection of their marine environment.

78. MEDITERRANEAN AND BLACK SEA HYDROGRAPHIC COMMISSION: MBSHC

An independent regional hydrographic commission formed of representatives from hydrographic offices or related services from countries bordering the Mediterranean and Black Seas. It cooperates with and operates within the framework of the International Hydrographic Organization (IHO).

79. MIXED COMMISSION FOR BLACK SEA FISHERIES: MCBSF

Organized in 1960, MCBSF develops programs for regulating fishing to conserve resources, develops techniques of commercial fishing, coordinates scientific research projects, and exchanges data. Members are Bulgaria, Romania, and Union of Soviet Socialist Republics.

80. MIXED COMMISSION FOR COOPERATION IN MARINE FISHING: MCCMF

Organized in 1973, MCCMF plans scientific and technical cooperation and mutual assistance in the development of fishing in the open sea, exchanges data, and plans conferences and meetings. Members are Bulgaria, German Democratic Republic, Poland, Romania, and Union of Soviet Socialist Republics.

81. NORTH ATLANTIC TREATY ORGANIZATION: NATO

Established in 1949, primarily as a military alliance to provide mutual protection for its member governments, NATO was authorized, by a 1956 decision, to expand its nonmilitary cooperative activities and include the furtherance of scientific progress through support of cooperative and collaborative efforts of scientists.

Organizations within NATO of interest to marine scientists are the Sub-Committee on Oceanographic Research; the Advisory Group for Aerospace Research and Development (AGARD), which sponsors many research projects, including those in air/sea interaction and subsurface communications; the Supreme Allied Command, Atlantic (SACLANT), which coordinates the oceanographic activities of NATO, directs the Military Oceanography Synoptic Surveys (MILOC), which take place in the eastern Atlantic Ocean and Mediterranean Sea, and supervises the Anti-Submarine Warfare Research Center (SACLANTEN), which performs research in acoustics and instrumentation; and the Committee on the Challenges of Modern Society (CCMS), which encourages member countries to undertake studies of environmental problems, such as oil pollution of the seas and coastal pollution in general, and to disseminate the resultant data throughout the world community. In response to the world's concern over the environment, NATO established in 1971 an Advisory Panel on Earth Sciences. In September and October 1979 it conducted a program of Marine Remote Sensing in the North Sea (MARSEN).

82. NORTHEAST ATLANTIC FISHERIES COMMISSION: NEAFC

The Permanent Commission of the International Fisheries Convention (PCIFC) was established in 1946 to enforce the provisions of the 1946 International Fisheries Convention regulating meshes of fishing nets and the size limits of fish. PCIFC was superseded in 1959 by NEAFC, which works closely with both the International Council for the Exploration of the Sea (ICES) and the International Commission for the Northwest Atlantic Fisheries (ICNAF). With the latter, it shares in a mutual policing system whereby enforcement officers may board ships and inspect fishing vessels of member countries while on the high seas.

83. NORTH PACIFIC FUR SEAL COMMISSION: NPFSC

Though not formally established until 1958, in accordance with the Convention of 1957 between Great Britain, Japan, USSR, and United States, NPFSC has antecedents that date to the Fur Seal Treaty of 1911. It is responsible for formulating and coordinating research programs to achieve the objects of the Convention, which are to ensure the maximum sustained productivity of the fur seal resources.

84. NORTH SEA HYDROGRAPHIC COMMISSION: NSHC

In realization of the growing hydrographic problems in the North Sea and the need for mutual cooperation to solve the problems, Dutch and Swedish hydrographers proposed the establishment of a North Sea Hydrographic Commission, which was formally established in 1962. It patterned itself somewhat on the Scandinavian Hydrographic Union (SHU), and three member nations serve on both organizations--Denmark, Norway, and Sweden. Other members of NSHC are Federal Republic of Germany, France, Great Britain, and the Netherlands. NSHC was responsible for the cooperative hydrographic survey that resulted in the 4-sheet International Chart of the North Sea. It is now concerned with the exploration and use of the Sea for energy sources and is developing policies relative to these activities. It is developing deepwater routes and the means of displaying them on charts. Cooperative training programs are also being developed.

85. NORTH SEA INTERNATIONAL CHART COMMISSION: NSICC

Established in 1973 upon recommendation of the North Sea Hydrographic Commission, NSICC includes Canada, Denmark, France, Federal Republic of Germany, Iceland, Netherlands, Norway, Sweden, United Kingdom, and United States. It is responsible for establishing specifications for international charts of the North Sea on medium and large scales.

86. ORGANIZATION FOR ECONOMIC COOPERATION AND DEVELOPMENT: OECD

Established in 1961, replacing the Organization for European Economic Cooperation (OEEC), which was formed in 1948, OECD is responsible for promoting economic growth and financial stability, for developing the world economy, and for expanding world trade.

It sponsors intergovernmental services for shipping and related marine activities and has a standing committee on fishing. It encourages economic development of marine resources in the developing countries and promotes cooperative research between laboratories working in similar fields. One of its cooperative projects, research into the causes of fouling and corrosion of ship hulls, led to the establishment of the Permanent International Committee for Research on the Preservation of Materials in the Marine Environment.

An Environment Committee (OECD/ENV) was organized within OECD to deal with the economic implications of environmental problems and

to advance cooperation in dealing with these matters among its member nations. Several cooperative environmental projects deal with the technical and economic aspects of water pollution.

The European Nuclear Energy Agency (ENEA) was established within OEEC in 1957. Still a part of OECD, ENEA has responsibilities that include a special interest in the management and disposition of radioactive wastes in the marine environment.

87. ORGANIZATION OF AFRICAN UNITY: OAU

Organized in 1963 to coordinate cultural, political, scientific, and economic policies among the African members, OAU succeeded to the functions of many previous organizations that dated back to 1958. In 1965, it absorbed the Commission for Technical Cooperation in Africa South of the Sahara, known as CCTA for its French name, Commission pour la Cooperation Technique en Afrique, which was then renamed the Scientific Technical Research Commission (OAU/STRC). Among other projects, OAU/STRC and its predecessor, CCTA, sponsored the Guinean Trawling Survey (GTS). It is currently coordinating a unified African approach to issues involved in the Law of the Sea Conference (LOSC).

The Scientific Council for Africa, known as CSA, for Conseil Scientifique d'Afrique, established in 1965 and composed of scientists representing the main scientific disciplines important to the development of Africa, provides scientific advice to OAU. The Inter-African Committee for Oceanography, Marine Biology, and Sea and Inland Fisheries, established in 1972 upon recommendation of CSA, advises OAU on the development of training and education, establishment of regional fishery research institutions, elaboration of international conventions on fishery jurisdictions, and management and conservation of the living resources of the sea.

88. ORGANIZATION OF AMERICAN STATES: OAS

Though formally established in 1951, OAS has antecedents that date back to 1890 with the establishment of the International Union of American Republics, later known as the Pan American Union (PAU). With the establishment of OAS, PAU became the general secretariat responsible for carrying out programs and other administrative activities of OAS.

In its charter, OAS is described as a regional agency within U.N. This affiliation is, however, limited to the settlement of disputes and maintenance of peace; in all other activities it acts independently of UN.

In recent years OAS has expanded its interests in marine areas and now promotes a Multinational Marine Science Project (MMSP) to support research particularly in the coastal and continental shelf areas. It is cooperating in marine projects in 12 countries and helps maintain 14 research centers offering training, facilities, and data. Assistance for fishery projects is another major area of interest. Many of its activities are carried out through the Inter-American Economic and Social Council (IA-ECOSOC), which promotes scientific research in areas of common interest.

Among its several specialized and autonomous organizations are two that have some interests in marine sciences: the Pan American Institute of Geography and History (PAIGH), originally established in 1928, encourages and supports activities in oceanography; and the Pan American Health Organization (PAHO) serves as the regional office of the World Health Organization (WHO) and has activities, including those in the marine field, that parallel those of WHO.

89. PERMANENT COMMISSION OF THE SOUTH PACIFIC: PCSP

Established in 1952 by Chile, Ecuador, and Peru and more frequently referred to as CPPS for its Spanish title, Comision Permanente del Pacifico Sur, it is responsible for holding regular conferences on the use, conservation, and regulation of the fishery resources of the three member countries. A member of CPPS has been present when members of the CEP (Chile-Ecuador-Peru) block nations have met to discuss fishery disputes with other nations, particularly the United States. Its activities are coordinated by its Comision Coordinadora de las Investigaciones Cientificas (COCIC).

One of its major efforts of recent years has been the coordination of the program Regional Studies of the Phenomenon Known as "El Nino," identified by its acronym ERFEN for its Spanish title "Estudio Regional del Fenomeno El Nino."

PCSP has also been known as the Permanent Commission on the Exploitation and Conservation of the Maritime Resources of the South Pacific, the Standing Committee of the Conference on Use and Conservation of the Marine Resources of the South Pacific, or the Permanent Commission for the Conservation of the Maritime Resources of the South Pacific. Occasionally it is referred to as the South Pacific Commission, which is a misnomer, as it has no relation to the South Pacific Commission, described in entry 93.

90. SCANDINAVIAN HYDROGRAPHIC UNION: SHU

Organized in 1929 as a regional cooperative venture, the Union encourages the exchange of information regarding research and technical details pertaining to nautical chart production and hydrography. All the Scandinavian nations are members. It is independent of, but cooperates fully with, the International Hydrographic Organization (IHO).

91. SOUTHEAST ASIA TREATY ORGANIZATION: SEATO

Organized in 1954, SEATO provides for the collective defense of the southeastern Asian countries and promotes programs in economic, social, medical, scientific, and technical fields, including those relating to marine sciences. It also provides technical assistance to member nations.

92. SOUTH CHINA SEA HYDROGRAPHIC COMMISSION: SCSHC

Proposed at the 6th U.N. Regional Cartographic Conference for Asia and the Far East held in 1970.

93. SOUTH PACIFIC COMMISSION: SPC

Established in 1947 by agreement of the six nations responsible for administering territories in the South Pacific: Australia, France, Great Britain, New Zealand, the Netherlands, and United States, SPC is concerned with the health and economic development of the area and supports the South Pacific Island Fishery Development Agency (SPIFDA). Development of marine resources is a major activity, and projects have included the introduction of new species of fish food, investigations of fish toxicity, seawater distillation, training of personnel, and establishment of fishery research institutes.

94. UNITED STATES-FRANCE COOPERATIVE PROGRAM IN OCEANOGRAPHY

An agreement exists between France and the United States to cooperate in areas of mutual concern. FAMOUS, the French-American Mid-Ocean Undersea Study, is an example of such cooperation.

95. UNITED STATES-JAPAN COOPERATIVE PROGRAM IN NATURAL RESOURCES: UJNR

Established in 1964 by bilateral agreement between Japan and the United States, UJNR promotes coordination of efforts between the two nations and encourages the exchange of scientists, data, and information. Activities of the overall program include the United States-Japan Science Program (UJSP), which includes basic and academic ocean research. UJSP receives guidance from the Marine Resources and Engineering Coordinating Committee (MRECC) of UJNR. UJNR establishes many panels that change as needed to work in specific areas. As of 1977 panels actively involved in marine science affairs were the Sea Bottom Surveys Panel, the Panel on Marine Observations and Forecasting, the Panel on Marine Electronics and Communications, the Panel on Diving Technology, the Panel on Marine Mining, the Panel on Marine Geology, and the Panel on Marine Facilities.

96. UNITED STATES-SPAIN SCIENTIFIC COOPERATION

In accordance with a treaty signed in August 1970, Spain and the United States cooperate in several scientific programs, one of which is the Sahara Upwelling Experiment (SUE), in the CINECA area.

97. UNITED STATES-UNION OF SOVIET SOCIALIST REPUBLICS JOINT COMMITTEE ON COOPERATION IN WORLD OCEAN STUDIES

Though the United States and the Soviets have been cooperating informally in oceanographic activities for many years, the cooperation was formalized by signed agreement on June 19, 1973. The Joint Committee meets once a year to implement the program. Areas of cooperation include studies of large-scale ocean-atmosphere interaction, ocean currents and ocean dynamics, geochemistry and marine chemistry, geological and geophysical investigations, biological productivity and biochemistry, and intercalibration and standardization of instruments and methods. As a result of the agreement, the Soviets plan contribute and participate in the Deep Sea Drilling Project (DSDP), which has been renamed the International Phase of Ocean Drilling (IPOD).

98. UNITED STATES-UNION OF SOVIET SOCIALIST REPUBLICS JOINT WORKING GROUP ON THE EFFECTS OF POLLUTANTS ON MARINE ORGANISMS

Organized under the terms of the Agreement on Cooperation in the Field of Environmental Protection, signed by the two countries in May 1972, the Joint Committee explores and proposes mutual cooperative programs for controlling pollution of the ocean waters. The program also calls for the exchange of information on research activities in the field. As a result of the agreement, the Joint Group approved the establishment of a joint marine environmental monitoring network to measure the effects of pollution on marine organisms and to disseminate the data. A bimonthly journal, to be published simultaneously in both countries, is planned. Exchange of scientists is also planned.

99. WEST AFRICAN ECONOMIC COMMUNITY: CEAO

Known by the initials of its French name, Communaute Economique de l'Afrique de l'Ouest and sometimes by the initials ECOWAS, Economic Community of West African States, CEAO was originally established by treaty in 1959 as the Customs Union of West African Countries and renamed in 1974. Its functions include promoting cooperation and development in all fields of economic activities among its member states. It is concerned with the conservation and development of fishery resources, development of ports and fishing fleets, promotion of fishing industries, and the harmonization of fishery legislation among its member countries.

B. NONGOVERNMENTAL ORGANIZATIONS

International Council of Scientific Unions

100. INTERNATIONAL COUNCIL OF SCIENTIFIC UNIONS: ICSU

Established in 1919 as the International Research Council (IRC) and renamed the International Council of Scientific Unions in 1931, ICSU facilitates and coordinates activities of the international scientific unions. Six unions composed IRC when it was first created. New unions may be added upon appropriate justification, and 18 now make up the Council as follows:

International Astronomical Union: IAU
International Geographical Union: IGU
International Union of Biochemistry: IUB
International Union of Biological Sciences: IUBS
International Union of Crystallography: IUC
International Union of Geodesy and Geophysics: IUGG
International Union of Geological Sciences: IUGS
International Union of Pharmacology: IUPHAR
International Union of Pure and Applied Chemistry: IUPAC
International Union of Pure and Applied Physics: IUPAP
International Union of Pure and Applied Biophysics: IUPAB
International Mathematical Union: IMU
International Union of Radio Science: IURS
International Union of History and Philosophy of Science: IUHPS
International Union of Nutritional Sciences: IUNS
International Union of Physiological Sciences: IUPS
International Union of Theoretical and Applied Mathematics: IUTAM
International Union of Immunological Societies (IUIS)

At its 15th General Assembly, held in 1967, IAPSO--the International Association for the Physical Sciences of the Ocean and a member of the International Union of Geology and Geophysics (IUGG)--proposed the creation of an International Union of Marine Sciences (IUMS). The proposal has yet to be accepted. Opposition to such a union centers on the interdisciplinary nature of oceanography; many on the Council feel that scientists prefer to be associated with their fellow scientists in the major discipline of their choice, e.g., geology, chemistry, biology.

Each union within ICSU comprises one or more independent associations, each representing a discipline falling within the scope of the parent union. Associations of interest to marine scientists are included in the more detailed descriptions of the several unions with interests in the marine sciences that follow. Most important to marine scientists are IAPSO, a member of IUGG; IABO, a member of IUBS; and CMG, a commission within IUGS. Entries 101 through 132 pertain to ICSU.

101. INTERNATIONAL GEOGRAPHICAL UNION: IGU

Founded in 1922 to promote the study of geographical problems, IGU initiates and coordinates research and provides for scientific discussion and publication. It promotes two permanent services of interest, the Bibliographie Geographique Internationale and the Bibliographie Cartographie Internationale.

Commissions are appointed as needed. One recently active but now defunct group was the Commission on the International Hydrological Decade. The now defunct Commission on Coastal Geomorphology evolved

into a Working Group established in 1972 to study the dynamics of shoreline erosion.

Entry 102 below describes an IGU Association of interest to marine scientists.

102. INTERNATIONAL CARTOGRAPHIC ASSOCIATION: ICA

A member of IGU, ICA was founded in 1959 to advance the study of cartographic programs, institute research, promote training, and serve as a forum for nationals to exchange ideas and documents. In recent years it has become interested in the mapping of the ocean floors and has established a Working Group on Ocean Cartography. It has sponsored several conferences on this topic and is developing a bibliography on oceanic cartography.

103. INTERNATIONAL UNION OF BIOLOGICAL SCIENCES: IUBS

Founded in 1919, IUBS promotes the development of the different branches of pure and applied biology, including marine biology. It provides an advisory committee to assist in the operation of the Naples Zoological Station in Italy, an internationally known marine laboratory.

Member associations with interests in marine sciences are described in entries 104 through 107.

104. INTERNATIONAL ASSOCIATION FOR ECOLOGY: IAE

Founded in 1967, IAE assumed the work of the former IUBS Commission on Applied Ecology--the promotion of the science and practice of ecology.

105. INTERNATIONAL ASSOCIATION OF BIOLOGICAL OCEANOGRAPHY: IABO

Founded in 1966 to promote the advancement of knowledge of the biology of the seas, IABO also serves to provide or improve contacts between biological oceanographers. It participates in numerous cooperative programs such as the Joint Oceanographic Assembly (JOA) or the International Southern Ocean Studies (ISOS). In 1975 it established a permanent Coral Reef Committee.

106. INTERNATIONAL ASSOCIATION OF MICROBIOLOGICAL SCIENCES: IAMS

Established in 1930.

107. INTERNATIONAL ASSOCIATION OF THEORETICAL AND APPLIED LIMNOLOGY: IAL

Founded in 1922 as the International Association of Limnology, IAL continues to use its old initialism to identify the present organization.

108. INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS: IUGG

The largest of the ICSU unions and the most important to marine scientists, IUGG was created in 1919 by uniting six previously autonomous associations--Geodesy, Geomagnetism, Seismology, Meteorology, Physical Oceanography, and Volcanology--antecedents of some of which began as early as 1862. In 1922, the addition of Hydrology made a total of seven. Descriptions follow in entries 109 through 116.

109. INTERNATIONAL ASSOCIATION OF GEODESY: IAG

Founded in 1962, IAG includes among its commissions the International Gravity Commission (IGC), whose purpose is to promote scientific investigations of the gravity field of the Earth. IGC is

served by the International Gravimetric Bureau (IGB) of the Federation of Astronomical and Geophysical Services (FAGS). IAG also includes the Commission on Recent Crustal Movements (CRCM), which, in 1976, began the International Center on Recent Crustal Movements (ICRCM) in Prague. CRCM has proposed the establishment of a Worldwide Geometrical Position Reference Network.

110. INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY: IAGA

Included in IAGA is the World Magnetic Survey Board or WMSQ, responsible for the World Magnetic Survey (WMS).

111. INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES: IAHS

Formerly called the International Association of Scientific Hydrology (IASH), IAHS has among its commissions the International Commission of Snow and Ice (ICSI), which sponsors many programs relating to he study of sea ice, including the AIDJEX project and the Baffin Bay-North Water Project. Another is the International Commission on Water Quality (ICWQ), formerly the International Hydrochemical Commission (IHC).

112. INTERNATIONAL ASSOCIATION OF METEOROLOGY AND ATMOSPHERIC PHYSICS: IAMAP

IAMAP cooperates with the World Meteorological Organization on the international program known as Global Atmospheric Research Program (GARP). Included in IAMAP are three commissions of interest: the Commission on Atmospheric Chemistry and Global Pollution (CACGP) which is concerned with the transport of pollutants from the atmosphere to the ocean; the International Advisory Commission on Marine Sciences (IACOMS); and the International Commission on Polar Meteorology (ICPM).

A proposal to change its name to the International Association for Atmospheric Science (IAAS) is being considered.

113. INTERNATIONAL ASSOCIATION FOR THE PHYSICAL SCIENCES OF THE OCEAN: IAPSO

Established in 1931 as the International Association of Physical Oceanography (IAPO), IAPSO assumed the functions of the Oceanographic Section of IUGG originally established in 1919. In 1967, in recognition of the broad spectrum of oceanography, which includes chemical and geological sciences as well as the physical sciences, its name was changed to the International Association for the Physical Sciences of the Ocean and its functions were broadened to reflect the changes. IAPSO's fundamental components are the Commissions on Marine Geophysics, Marine Chemistry, and Physical Oceanography. It also includes a Committee on Tides and Mean Sea Level, which serves as the scientific adviser to the Permanent Service for Mean Sea Level (PSMSL). The Committee on GEBCO which served as the scientific adviser to the International Hydrographic Organization (IHO) has been abolished and is now the responsibility of a Joint IOC/IHO Guiding Committee for GEBCO. When needed, IAPSO establishes working groups to explore specific questions. Together with IAMAP it has formed a Joint IAMAP-IAPSO Committee on Air-Sea Interaction.

114. INTERNATIONAL ASSOCIATION OF SEISMOLOGY AND PHYSICS OF THE EARCH'S INTERIOR: IASPEI

Founded in 1901, IASPEI collects and disseminates data on earthquakes, tsunamis and other oceanic waves of seismic origin, gravity anomalies, and related topics.

115. INTERNATIONAL ASSOCIATION OF VOLCANOLOGY AND CHEMISTRY OF THE EARTH'S INTERIOR: IAVCEI

Created in 1919 as the International Association of Volcanology (IAV), IAVCEI is responsible for collecting and disseminating data in its special fields, which include sea-floor spreading.

116. INTERNATIONAL UNION OF GEOLOGICAL SCIENCES: IUGS

Founded in 1961, IUGS aims to advance geological investigations. A component of special interest is the Commission for Marine Geology (CMG), which sponsors geological, geochemical, and geophysical investigations of the sea floor. CMG also supervises the preparation of the International Geological and Geophysical Cruise Inventory (IG/GCI) and is responsible for the inventory of marine geological and geophysical data taken before to 1970. Another of interest is the Commission on Tectonics. IUGS also includes a Committee on Storage, Automatic Processing, and Retrieval of Geological Data (COGEODATA), which prepares standards and formats for geological data and is compiling an index to the availability of data. Associations of some interest are the International Association of Geochemistry and Cosmochemistry (IAGC) and the International Association of Engineering Geology (IAEG).

117. INTERNATIONAL UNION OF THE HISTORY AND PHILOSOPHY OF SCIENCE: IUHPS

A Commission on the History of Oceanography (CHO) was recently included in IUPHS.

118. SPECIAL COMMITTEES OF ICSU

A number of special and scientific committees have been created within ICSU to concern themselves with interdisciplinary problems that overlap functions of two or more of the unions. Entries 120 through 126 cover those of interest to marine scientists.

119. COMMITTEE ON DATA FOR SCIENCE AND TECHNOLOGY: CODATA

Founded in 1966 to promote and encourage the production and distribution of compilations of critically selected numerical values of properties of substance and importance, CODATA determines needs, provides guidance, evaluates, and establishes standards. It is establishing a World Data Referral Center (WDRC).

120. COMMITTEE ON SPACE RESEARCH: COSPAR

COSPAR is concerned with remote sensing of Earth resources by satellite, including sensing of the marine environment.

121. SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH: SCAR

Founded in 1958, SCAR is responsible for coordinating scientific activity in the Antarctic and includes a working group on oceanography. It sponsors the Antarctic Research Program (ARP) which includes programs relating to oceanography and marine biology.

SCAR includes Groups of Specialists, several of which are: the Group of Specialists on Marine Living Resources of the Southern Ocean, which is developing the BIOMASS program; the Group of Specialists on Ice Shelf Drilling Projects (ISDP); and the Group of Specialists on Environmental Impact Assessments of Mineral Resource Exploration and Exploitation in the Antarctic (EAMREA).

122. SCIENTIFIC COMMITTEE ON OCEANIC RESEARCH: SCOR

Founded in 1957 to further all disciplines of research in the oceans, SCOR is a scientific advisory body to IOC. It facilitates

the exchange of oceanographic data, establishes standards for data, and furthers international research in the oceans.

SCOR recently established a Committee on Climatic Changes and the Ocean (CCCO), which replaced a Committee on Oceanography and GARP (COG). It includes many working groups (WGs) that are established and abolished as needed. Acronyms associated with these include NEADS--the North East Atlantic Dynamics Studies, a subgroup of the WG on Internal Dynamics of the Oceans, also sponsored by IAPSO; OAMEX, THE WG on Ocean-Atmosphere Exchange Processes, also sponsored by IAMAP and IAPSO; BIOMASS--the WG on Biological Investigations of the Marine Antarctic System and Stocks, also sponsored by ACMRR, IABO, and SCAR: and CER, the WG on Coastal and Estuarine Regimes, cosponsored by ECOR and IAPSO.

123. SCIENTIFIC COMMITTEE ON WATER RESEARCH: COWAR

Among its responsibilities, COWAR advised ICSU on the activities of the International Hydrological Decade (IHD).

124. SPECIAL COMMITTEE FOR THE INTERNATIONAL BIOLOGICAL PROGRAMME: SCIBP

Now abolished, SCIBP supervised the International Biological Programme (IBP), which included several subprograms relating to marine biology.

125. SCIENTIFIC COMMITTEE ON PROBLEMS OF THE ENVIRONMENT: SCOPE

Established in 1969 at the Stockholm Conference on the Environment, SCOPE is concerned with monitoring, evaluation, prediction, and modeling of environmental events. In 1974 it cosponsored, with UNEP, a Workshop on Impact Studies in the Environment (WISE).

126. INTER-UNION COMMITTEES OR COMMISSIONS

At times, two or more unions may elect to form a committee or commission to work on projects of mutual concern. Of interest are the Upper Mantle Committee (UMC), which includes special commissions to study the world rift systems and continental margins and which supervised the Upper Mantle Project (UMP); the Inter-Union Commission for Geodynamics (ICG), also known as the ICSU Inter-Union Commission for Geodynamics (IICG), which was established in 1970 to administer the International Geodynamics Project (IGP); the Special Committee on Solar-Terrestrial Physics (SCOSTEP), formerly known as the Inter-Union Commission on Solar Terrestrial Physics (IUCSTP); and the Inter-Union Committee on Radio-Meteorology (IUCRM), established to bridge the gap between scientists involved in radio meteorology and those involved in meteorology. A proposal to establish an Inter-Union Committee on Radio Oceanography (IUCRO) or Radio Geophysics (IUCRG) to be concerned with remote sensing and routine monitoring of the oceans was made in 1975. After some consideration, the proposal was dropped and IUCRM's constitution was revised in 1976 to include responsibilities in oceanography.

127. PANEL ON WORLD DATA CENTERS: PWDC

During the International Geophysical Year (IGY), ICSU established a Special Committee for IGY, known as CSAGI for its French title, Comite Special de l'Annee Geophysique International. CSAGI was terminated in 1959, and many of its functions were assumed by the newly created Comite International de Geophysique (CIG), which was terminated in 1968. CSAGI and CIG were responsible for coordinating projects and programs of nations participating in IGY and for making the results of each program available to the world

scientific community. To this end, CSAGI conceived, established, and supervised a program of World Data Centers (WDCs), and CIG continued the program. Upon the termination of CIG, ICSU created a special Panel on World Data Centers to continue their functional supervision.

128. FEDERATION OF ASTRONOMICAL AND GEOPHYSICAL SERVICES: FAGS

ICSU provides 11 services, each responsible for the treatment of a specialized series of observations collected throughout the world. The Services are centralized in the Federation of Astronomical and Geophysical Services (FAGS). Though international in character, each service is in a national scientific institution. Those of interest to marine scientists are covered in entries 130 through 133.

In 1975, FAGS' executive board added a policy group to its structure, known as the Policy Group on Scientific Information (POGSI).

129. CENTRAL SEISMOLOGICAL BUREAU: BCIS

Located in Strasbourg, France, and known by the initials of its French name, Bureau Central International de Seismologie, BCIS is responsible for the collection of earthquake and related data. Theories on sea floor spreading, continental drift, and plate tectonics have been supported by data held by BCIS.

130. INTERNATIONAL GRAVIMETRIC BUREAU: IGB

Usually known by the initials of the French name, Bureau Gravimetrique International (BGI), IGB is in Paris. Its data holdings are essential in telecommunications, navigation, geodesy, and geophysics. Among its holdings are gravity and bathymetric profiles at sea. Since 1970 it has been compiling the World Map of Sea Gravity Surveys.

131. PERMANENT SERVICE FOR MEAN SEA LEVEL: PSMSL

Located in the United Kingdom, PSMSL is responsible for data on sea-level heights above a fixed datum and for the collection of information about tide-gage installations and methods of processing tide-gage observations. It recently revised its format for the mean sea-level data base and has made it available in a published version that will be updated annually. It regularly publishes bibliographies on mean sea levels and tides.

132. PERMANENT SERVICE ON EARTH TIDES: SPMT

Located in Brussels, SPMT is known by the initials of its French French title, Service Permanent des Marees Terrestres.

Other Nongovernmental Organizations

133. AMERICAN ASSOCIATION OF PORT AUTHORITIES: AAPA

Founded in 1906, AAPA is concerned with the development of ports and harbors in the Western Hemisphere.

134. ARCTIC INSTITUTE OF NORTH AMERICA: AINA

Founded in 1945 by Canadian and United States scientists, AINA furthers the scientific study and exploration of the Arctic. Its interests are not confined to the Arctic--it is also concerned with the Middle North, Alpine Regions, and Antarctica. In 1974 it organized a program called Arctic Development and the Environment (ADE), whose purpose is to influence the interplay of forces inherent in resource development with the protection of the total environment. It sponsors symposia, programs for exploration, and compiles the Arctic Bibliography, a comprehensive and exhaustive bibliography of Arctic

literature, which is currently in its 17th volume. It is now developing the Arctic Science and Technology Information System (ASTIS).

135. ASSOCIATION OF ISLAND MARINE LABORATORIES OF THE CARIBBEAN: AIMLC

AIMLC coordinates programs of common interest to the dozen or so marine laboratories in the Caribbean. It sponsors occasional meetings, but most of its activities are handled through correspondence.

136. ATLANTIC SALMON RESEARCH TRUST: ASRT

ASRT was established to support the study and development of the regeneration of populations of Atlantic salmon and to conduct research into their diseases.

137. BALTIC AND INTERNATIONAL MARITIME CONFERENCE: BIMCO

Founded in 1905 as the Baltic and White Sea Conference, BIMCO was given its present name in 1927. General meetings are held every 2 years, and problems affecting the shipping industry are considered. Between meetings, it is governed by an elected Board of Directors, an Executive Committee, and a Documentary Council.

138. BALTIC MARINE BIOLOGY ORGANIZATION: BMBO

Also known as the Baltic Marine Biologists (BMB), BMBO was formed in 1968 to arrange marine biological symposia on Baltic problems and to facilitate cooperation between Baltic biologists and laboratories. It met first in 1971 and plans annual meetings.

139. CARIBBEAN MARINE BIOLOGICAL INSTITUTE: CARMABI

Founded in 1955 as a center for scientific marine research and applied marine biology, CARMABI also concentrates on ecology of coral reefs. Though located in the Netherlands Antilles and supported by the Dutch Government, the Government of the Netherlands Antilles, and the Island of Curacao, the Institute is international in character.

140. CHARLES DARWIN FOUNDATION FOR THE GALAPAGOS ISLANDS

Founded in 1959 to administer the Charles Darwin Research Station on the Islands and to provide for the conservation of the flora, fauna, and habitat of the Islands and their surrounding seas.

141. CLEAN WORLD INTERNATIONAL: CWI

Founded in 1975, CWI is concerned with the protection of the total environment. At its sixth meeting, its member countries agreed to take concerted action to campaign against improper disposal of refuse at sea.

142. CONFERENCE OF BALTIC OCEANOGRAPHERS: CBO

A loose organization of oceanographers from countries bordering the Baltic Sea who confer at irregular intervals. There is no permanent headquarters, and meetings are called by a coordinator.

143. CONSERVATION OF CLEAN AIR AND WATER: CONCAWE

An international study group sponsored by oil companies.

144. CONSEJO LATINO-AMERICANO DE OCEANOGRAFIA: CLAO

Organized in 1961 and disbanded in 1966, CLAO, during its brief existence, was a cosponsor of the South Atlantic Cooperative Investigations (SACI), also known as TRIDENT.

145. DAVID DAVIES MEMORIAL INSTITUTE OF INTERNATIONAL STUDIES: DDMIIS

Formerly the New Commonwealth Study, the Institute was established under its present name in 1951. Its principal aim is research into the causes of conflicts between states and projected means to ameliorate or remove such causes. Topics considered include the conservation and exploration of the seas and oceanic pollution.

146. EUROPEAN ASSOCIATION OF EXPLORATION GEOPHYSICISTS: EAEG

Established in 1951, EAEG provides a means to establish contacts and encourage cooperation between geophysicists in Europe and elsewhere.

147. EUROPEAN CENTER FOR MARINE ENVIRONMENTAL PROBLEMS: CEPEM

CEPEM, the acronym, commonly used for the Center, relates to its French title, Centre d'Etude Europeenne pour les Problems de l'Environment Marine.

148. EUROPEAN DIVING TECHNOLOGY COMMITTEE: EDTC

Formed in 1973 as a result of the initiative of the United Kingdom Society for Underwater Technology, EDTC includes nine member countries, each of whom sends two representatives, one representing commercial diving operations and the other medical knowledge. EDTC provides a forum for the discussion of standards and techniques of diving, types of equipment, and arrangements for monitoring the health of divers; it also encourages the development of safety standards and provides advice to government committees and other organizations and individuals concerned with diving.

149. EUROPEAN FEDERATION FOR THE PROTECTION OF WATERS: EFPW

Founded in 1956, EFPW encourages cooperation through exchange of ideas and coordinates treatment of basic problems in the protection of waters.

150. EUROPEAN GEOPHYSICAL SOCIETY: EGS

Organized in 1971, the society exchanges information and ideas and plans for cooperative research.

151. EUROPEAN MALACOLOGICAL UNION: EMU

Founded in 1962, EMU furthers the study of mollusca by individual malacologists or by societies and institutions in Europe and in countries bordering the Mediterranean Sea.

152. EUROPEAN MARICULTURE SOCIETY: EMS

Formed in 1976, it acts as a clearinghouse for information that it channels to the fish culturist, researcher, and administrator by means of a quarterly newsletter.

153. EUROPEAN MARINE BIOLOGICAL ASSOCIATION: EMBA

A loosely structured organization of marine biologists, EMBA holds frequent symposia, the first of which was held in 1961, the tenth in 1976. An executive committee, the Committee for European Marine Biological Symposia (CEMBS), is responsible for organizing the symposia, which are held in a different country each time.

154. EUROPEAN OCEANOGRAPHIC ASSOCIATION: EUROCEAN

Founded in 1970 to promote marine resources with a view both to exploring and studying them and protecting and using them,

EUROCEAN is primarily interested in coordinating and promoting the activities of Europe-based ocean-oriented industries.

155. EUROPEAN UNDERSEA BIOMEDICAL SOCIETY: EUBS
Founded in 1971, EUBS promotes scientific communications among European scientists in the field, primarily by holding scientific meetings.

156. FEDERATION OF INSTITUTIONS CONCERNED WITH THE STUDY OF THE ADRIATIC SEA: FICSAS
Founded in 1971, FICSAS coordinates activities, research, and training programs for those institutions involved in the scientific study of the Adriatic Sea.

157. GREAT LAKES STUDY GROUP: GLSG
An informal organization of representatives from Canadian and United States agencies engaged in basic and applied research and engineering investigations related to the development and use of Great Lakes water resources, GLSG was originally organized in 1962 as the Lake Erie Study Group. Its purposes are is to facilitate information exchange and to provide opportunities for cooperation. It also sponsors the acquisition, storage, retrieval, and dissemination of basic data held by the Great Lakes Regional Data Center.

158. GULF AND CARIBBEAN FISHERIES INSTITUTE: GCFI
Established in 1948 and located at the University of Miami, Fla., GCFI holds annual meetings to review the status of the fishing industry in the Caribbean, assist Caribbean countries in the development of their programs, establish standards for seafood inspections, promote aquaculture and fishery research, and develop a program of coastal zone management. A frequent topic of discussion is the establishment of limits of fishing areas. Meetings are held yearly, and every third one is outside the United States. Membership is open to representatives of industries and scientists in countries bordering the Gulf of Mexico and the Caribbean Sea.

159. INTERNATIONAL AGENCY FOR ^{14}C DETERMINATION (MEASUREMENT OF PRIMARY PRODUCTIVITY IN THE SEA): (No initials ever used)
Established in 1958 as a service for biological oceanographers, this agency is responsible for producing standardized ampoules of ^{14}C (as $N_aH_2{}^{14}CO_3$), counting ^{14}C labeled plankton samples, and the calculation of carbon assimilation. It is funded by UNESCO. Since 1975, it has been an institute affiliated with the Danish Academy of Technical Sciences.

160. INTERNATIONAL ASSOCIATION FOR GREAT LAKES RESEARCH: IAGLR
Formed in 1967, IAGLR provides a formal organization to sponsor the Conference on Great Lakes Research, previously held under the auspices of the Great Lakes Research Division of the University of Michigan and the Great Lakes Institute of the University of Toronto. Its objectives are to promote and disseminate the results of all aspects of research in the Great Lakes.

161. INTERNATIONAL ASSOCIATION FOR MEDICAL OCEANOGRAPHY: IAMO
Founded in 1973.

162. INTERNATIONAL ASSOCIATION FOR POLLUTION CONTROL: IAPC

A nonprofit professional association formed in 1970, IAPC provides an opportunity for interdisciplinary forums and consolidates knowledge on pollution control. It sponsors an annual conference on pollution control in the marine environment.

163. INTERNATIONAL ASSOCIATION OF DREDGING COMPANIES: IADC

Founded in 1965, IADC promotes and defends the professional interests of its members, who are private dredging contractors. The Association itself is a member of both ECOR and PIANC.

164. INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES: IAFWA

Established in the United States in 1902 as the National Association of Game Commissioners and Wardens, IAFWA was expanded to include all of North America in 1917 and its name was changed to the International Association of Game, Fish and Conservation Commissioners (IAGFCC). Its present name was adopted in 1976. It promotes research into conservation measures regarding fish and game and coordinates works of public conservation agencies in North America. A Marine and Estuarine Committee is included in its organizational structure.

165. INTERNATIONAL ASSOCIATION OF FISH MEAL MANUFACTURERS: IAFMM

Organized in 1959, IAFMM is a special consultant to FAO.

166. INTERNATIONAL ASSOCIATION OF INSTITUTES OF NAVIGATION: IAIN

Established in 1975, IAIN coordinates activities of navigation institutes. Membership is open to institutes throughout the world. IAIN was originally proposed to be called the International Association of Navigation Institutes (IANI).

167. INTERNATIONAL ASSOCIATION OF LIGHTHOUSE AUTHORITIES: IALA

Organized in 1957 in accordance with recommendations made at the 1955 Conference on Lighthouses and Other Aids to Navigation, IALA acts as a technical forum to bring lighthouse authorities together to discuss technical matters and other topics of mutual interest relating to aids to navigation and to establish international standards for these aids.

168. INTERNATIONAL ASSOCIATION OF SEDIMENTOLOGY: IAS

Formed in 1952, IAS coordinates international research in sedimentology and provides a medium for disseminating information. IAS meets every 4 years.

169. INTERNATIONAL ASSOCIATION ON PORTS AND HARBORS: IAPH

Founded in 1955, IAPH encourages cooperation with the exchange of information on the development of ports and harbors and encourages standardization of procedures governing international trade.

170. INTERNATIONAL ASSOCIATION ON WATER POLLUTION RESEARCH: IAWPR

Founded in 1962 and formally constituted in 1965, IAWPR encourages cooperation and exchange of information in the field of water pollution research and water quality management.

171. INTERNATIONAL ATLANTIC SALMON FOUNDATION: IASF

Established in 1968, IASF is dedicated to the conservation and wise management of the Atlantic salmon and its environment. It

directs and supports programs in education, public information, research, and international cooperation. In 1974 it established the North Atlantic Salmon Research Centre (NASRC) in New Brunswick, Canada. The Centre receives financial support from many other organizations, principally Canada's Department of the Environment.

172. INTERNATIONAL CABLE PROTECTION COMMITTEE: ICPC

Founded in 1958 as the Cable Damage Committee, ICPC was given its present name in 1967. Its aim is to protect submarine cables from corrosion and other damages, including those caused by fishing gear. It investigates pollution in relation to cables, and it also produces cable warning charts. It draws its membership from telecommunications administrators and operating companies in 15 countries.

173. INTERNATIONAL CENTER FOR LIVING AQUATIC RESOURCES MANAGEMENT: ICLARM

A nonprofit scientific center incorporated in 1977. ICLARM is in the Republic of the Philippines and receives funding from the Rockefeller Foundation. Its primary function is to investigate fish production as one of the means of increasing the availability of protein for the Southeast Asia and Southwest Pacific areas.

174. INTERNATIONAL CHAMBER OF SHIPPING: ICS

Founded in 1921 as the International Shipping Conference, ICS was given its present name in 1948. It aims to promote the interest of its members in all matters of general policy. Marine pollution, especially that caused by oil spills, is a major concern of ICS, which cooperates with GESAMP. Membership is drawn from national associations of private shipowners in 19 countries.

175. INTERNATIONAL COMMISSION ON ILLUMINATION: ICI

Founded in 1900 as the International Photometric Commission, ICI was given its present name in 1913. It provides an international forum for all matters pertaining to the science and art of illumination and promotes the study of such matters, including illumination in the marine environment.

176. INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION: ICRP

Founded in 1928 as the International X-Ray and Radium Protection Commission, ICRP was given its present name in 1950. It is responsible for the whole field of radiation protection and establishes maximum limits for radiation levels, including those in the marine environment; IAEA adopts the limits established by ICRP.

177. INTERNATIONAL CONGRESS OF MARITIME MUSEUMS: ICMM

Members include representatives from maritime museums throughout the world.

178. INTERNATIONAL COUNCIL FOR BIRD PRESERVATION: ICBP

Founded in 1922, ICBP stimulates interest in more adequate protection of wild birds. Recently it has taken an active part in promoting actions to prevent oil pollution of the sea.

179. INTERNATIONAL COUNCIL OF MARINE INDUSTRY ASSOCIATIONS: ICOMIA

Founded in 1967 to promote boating as an international recreational activity, ICOMIA serves as a medium for promoting research on matters of safety, service, and quality of boats and marinas.

180. INTERNATIONAL FEDERATION OF SURVEYORS: FIG

The acronym FIG stands for its French title: Federation Internationale des Geometres. FIG, founded in 1878, promotes cooperation among surveyors. In 1968 it included hydrographic surveying on its program for the first time, and in 1972 established a Commission for Hydrographic Surveying.

181. INTERNATIONAL GEOLOGICAL CONGRESS: IGC

The First International Geological Congress, held in 1878, was organized to provide for international cooperation on matters of geological classification and nomenclature. It is loosely organized and has no permanent secretariat. Host countries administer the meetings, which are held every 3 to 4 years. Between sessions a Bureau, elected at the previous General meeting, conducts the business of the Congress. IUGG serves as the permanent steering committee; however, the Union and the Congress are separate entities.

Commissions are created by each Congress, and some achieve a semi-permanent status. Commissions of concern to marine scientists include those on the Statigraphic Lexicon, the Study of the Earth's Crust, the Geological Map of the World (CGMW), and the Division and Study of the Kirroo (Gondawana).

182. INTERNATIONAL INSTITUTE FOR PEACE AND CONFLICT RESEARCH: SIPRI

Established in 1966 and located in Stockholm, Sweden, SIPRI studies many aspects of peace and conflict and sponsors pertinent symposiums. The effective use of the oceans is a major topic of study.

183. INTERNATIONAL INSTITUTE OF MARITIME CULTURE: IIMC

This Institute is an organization of individuals interested in the literary, artistic, and sociological aspects of the study of the sea.

184. INTERNATIONAL INSTITUTE OF PHYSICAL OCEANOGRAPHY: IIPO

This Institute was proposed by the former Group of Experts on Long-Term Scientific Policy and Planning (GELTSPAP).

185. INTERNATIONAL LAW ASSOCIATION: ILA

Founded in 1873 to study and advance public and private international law, ILA includes committees on water resources law and on deep-sea mining. Both, especially the latter, have concentrated on questions relating to the breadth of the Continental Shelf; types of international regimes appropriate for the control of the ocean floor beyond the limits of national jurisdiction; pollution; and liability for methods of submarine research and activities that damage persons, property, and other users of the seas.

186. INTERNATIONAL MARITIME RADIO COMMITTEE: CIRM

Founded in 1928, CIRM, an acronym based on the French title, Comite International de Radio-Maritime, comprises representatives from communications and electronics manufacturers, ship radio operators, radio-manning organizations, radio repair and service companies, and others who provide service, advice, and guidance to their respective governments on international communications matters. CIRM participates as an observer in IMCO, ICAO, and ITU meetings, and this participation has helped promote a better understanding of ocean station vessel operations and search and rescue communications at sea.

187. INTERNATIONAL MARITIME COMMITTEE: IMC

Founded in 1897, IMC contributes to the unification of maritime law and encourages the creation of national organizations for unifying law and coordinating programs. It concerns itself with collisions, salvage, and assistance at sea; limitations of shipowners' responsibilities; maritime mortgages and liens; exemption clauses in bills of lading; responsibilities towards passengers and stowaways; and maritime oil pollution.

188. INTERNATIONAL OCEAN INSTITUTE: IOI

Sometimes called the Pacem In Maribus (PIM) after the annual convocation of its sponsors, IOI was founded in 1972 and is located at the Royal University of Malta. It is supported financially by several national governments, private bodies, and one time by UNDP. Its interests are worldwide, and it sponsors studies on the political and economic implications of new developments in marine science and technology and on programs leading to a monitoring and control system for pollution in the marine environment. It is also planning to establish an information and documentation center.

189. INTERNATIONAL OCEANOGRAPHIC FOUNDATION: IOF

Founded in 1954, IOF encourages the scientific study of the seas, lends financial assistance to research organizations, awards graduate fellowships, and cosponsors the international exchange of scientists with the Nordic Council for Marine Biology. It publishes a semipopular journal and related publications popularizing and promoting oceanography and sponsors the annual International Game and Fish Conference.

190. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION: ISO

Founded in 1946, ISO promotes the development of standards in the world with a view to facilitate international exchange of goods and services and to develop mutual cooperation in the sphere of intellectual, scientific, technological, and economic activity.

191. INTERNATIONAL PALEONTOLOGICAL UNION: IPU

Established in 1933 at the International Geological Congress, IPU promotes and coordinates international activities in paleontology. IPU sponsors an international directory of paleontologists and maintains a card index of specimens located throughout the world. Its meetings coincide with those of the International Geological Congress and are held every 3 to 4 years.

192. INTERNATIONAL PETROLEUM INDUSTRIES ENVIRONMENTAL CONSERVATION ASSOCIATION: IPIECA

Established in 1974, IPIECA is a coordinating body through which the oil industry responds to the environmental initiatives of UNEP and other UN bodies involved in the protection of the environment. Its membership includes 19 oil companies in 10 countries.

193. INTERNATIONAL SEAWEED SYMPOSIA: ISS

Impetus for the ISS stemmed from a 1948 conference held at Dalhousie University, Halifax, on the use of seaweed. The official symposia, which are generally held triannually, began in 1952. A permanent international advisory committee plans and administers the symposia.

194. INTERNATIONAL SHIP STRUCTURE CONGRESS: ISSC

Organized in 1961, ISSC meets every 3 years to give experts in different countries engaged in research work on strength and structure problems related to ships and other marine structures an opportunity to exchange information, recommend research, and otherwise cooperate. In addition to gathering information on ship structures, members are also interested in data about outside forces affecting marine structures, especially waves. Between meetings, ISSC is governed by an elected Standing Committee of 12 members, each from a different country.

195. INTERNATIONAL SOCIETY OF BIOMETEOROLOGY: ISB

Organized in 1956 to provide an international body to bring scientists in the field together, ISB meets at 3-year intervals. Included in the Society is a Special Committee on Nautical Biometeorology. Although unaffiliated with any other international organization, it is invited to send an observer to the meetings of the World Meteorological Organization.

196. INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES: IUCN

An Office International pour la Protection de la Nature was established in 1928; in 1948, it was succeeded by the International Union for Protection of Nature, established following an International Conference sponsored by UNESCO and the Government of France. In 1956, it was renamed the International Union for the Conservation of Nature and Natural Resources to reflect the increasing popular concept that natural resources must be conserved and used wisely.

It is planning a World Conservation Strategy (WCS) to increase the effectiveness of international conservation action. UNEP is lending financial support to the program.

IUCN includes a Commission on Marine Habitats, which promotes the establishment of marine national parks and provides ecological guidelines for use in coastal, estuarine, and island areas, and is responsible for the preparation of the World Directory of National Parks and Protected Areas, which will include a separate section on marine parks and reserves.

197. INTERNATIONAL UNION FOR QUATERNARY RESEARCH: INQUA

Founded in 1928 as the International Association for the Study of the European Quaternary, INQUA had its scope and interest enlarged in 1932 to include the Quaternary throughout the world and its name changed to its present title. Meetings are held every 4 years. It is composed of eight permanent commissions, one of which is the Commission on Shorelines.

198. INTERNATIONAL WATER RESOURCES ASSOCIATION: IWRA

Organized in 1970, IWRA provides an international forum for discussing all aspects of water resources science and technology in an interdisciplinary manner.

199. INTER-PARLIAMENTARY UNION: IPU

Founded in 1889, IPU promotes personal contacts between members of parliaments and unites them in common actions. At its 1971 meetings at Caracas, IPU identified pollution of the seas by oil as one of two areas of particular urgency for consideration at the 1972 UN Conference on the Human Environment (UNCHE).

200. MEDITERRANEAN ASSOCIATION FOR MARINE BIOLOGY AND OCEANOGRAPHY: MAMBO

Founded in 1964, MAMBO meets every 2 years to examine the marine biology programs in the Mediterranean area, identify needs and deficiencies, and recommend measures to correct the deficiencies and strengthen programs. It also establishes mechanisms to secure equipment and services for multiple users, establishes uniform standards for measurements, and develops programs for recruiting and training marine biologists.

201. NORDIC COUNCIL: NC

Established in 1952, NC includes all the Scandinavian countries as members. It is concerned with developing joint action to combat common problems, one of which is marine pollution.

202. NORDIC COUNCIL FOR MARINE BIOLOGY: NCMB

Founded in 1956, the Council promotes joint training research in marine biology in the Scandinavian countries. Four marine biology stations, one in each of the countries, collaborate to train marine biologists and to work in marine sciences.

203. NORDIC HYDROLOGICAL ASSOCIATION: NHA

The Association was founded in 1970, upon the recommendation of NUTSAM, the Joint Panel for NORDIC/IHD Cooperation.

204. NORDIC UNIVERSITY GROUP ON PHYSICAL OCEANOGRAPHY: NUGPO

Founded in 1955, NUGPO has members in the four Scandinavian countries.

205. OFFSHORE TECHNOLOGY CONFERENCE: OTC

OTC is a technical forum and exhibition on offshore research and development held yearly since its founding in 1968 and supported by eleven international engineering and scientific societies. An OTC Executive Committee plans the yearly conferences.

206. OIL COMPANIES INTERNATIONAL MARINE FORUM: OCIMF

Organized in 1970, OCIMF is a consultant to IMCO and includes as members 43 companies controlling 80 percent of crude and fuel oil moved by sea. It is a member of the International Petroleum Industries Environmental Conservation Association (IPIECA).

207. PACIFIC SCIENCE ASSOCIATION: PSA

Founded in 1920 to promote cooperative effort in the studies of scientific problems in the Pacific area, PSA sponsors congresses held every 4 or 5 years. Each congress appoints standing committees to study and report on areas of common interest; a marine sciences committee is regularly appointed.

208. PAN INDIAN OCEAN SCIENTIFIC ASSOCIATION: PIOSA

Founded in 1951 at the first Pan Indian Ocean Congress, PIOSA provides a common organization to discuss and promote concerted action in regard to the progress of countries around the Indian Ocean. Development of marine resources is a major topic of interest.

209. SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS: SNAME

SNAME is a nonprofit society dedicated to the advancement of the art, science, and practice of naval architecture, shipbuilding, ship operating, and marine and ocean engineering. Membership is on an individual basis.

210. UNION OF INTERNATIONAL ASSOCIATIONS: UIA

Founded in 1907 as the Central Office of International Associations, UIA became a federation in 1910 and a Union in 1951. It serves as an information center for international organizations and provides advice and encouragement to them.

211. UNION OF INTERNATIONAL ENGINEERING ORGANIZATIONS: UIEO

Established in 1951, UIEO coordinates the activities of member organizations, which consist of 17 nongovernment international engineering organizations concerned with promoting international cooperation in clearly defined fields of engineering sciences. It also sponsors the Engineering Committee on Oceanic Resources (ECOR). Descriptions of ECOR and of the several UIEO-affiliated organizations of interest to marine scientists follow in entries 212 through 216.

212. ENGINEERING COMMITTEE ON OCEANIC RESOURCES: ECOR

Formally established in 1971, ECOR held its first General Assembly in 1972. Its functions include establishing and maintaining international professional engineering communications in marine affairs, providing engineering advice to other international, intergovernmental, or national organizations concerned with marine sciences, and assisting the engineering profession in the development of its capability in the use of the oceans and in the improvement of the quality of the marine environment.

It includes members from other international organizations including IAHR, ISSC, IADC, PIANC, WODA, IAWPR, IAEG, and ISSMFE. It has been formally accepted by IOC to serve as its advisory body on marine engineering and will provide an international focus for the engineering research and exploration necessary for LEPOR.

213. INTERNATIONAL ASSOCIATION FOR HYDRAULIC RESEARCH: IAHR

This association was organized in 1935 to promote hydraulic research and to exchange international information about such hydraulic research.

214. INTERNATIONAL GAS UNION: IGU

Founded in 1931, IGU studies everything pertaining to the gas industry, promotes progress, and promotes international cooperation and collaboration. It is concerned with the exploration for gas deposits, including those in the marine environment.

215. INTERNATIONAL SOCIETY FOR SOIL MECHANICS AND FOUNDATIONS ENGINEERING: ISSMFE

Founded in 1936, ISSMFE promotes international cooperation among scientists and engineers in the field of soil mechanics and its practical applications. It establishes standards for the classifications of geotechnical literature, static and dynamic penetration test methods, soil sampling and soil mechanics, and cone penetration tests.

216. PERMANENT INTERNATIONAL ASSOCIATION OF NAVIGATION CONGRESSES: PIANC

Established in 1900 as an amalgamation of the Inland Navigation Congress (founded in 1888) and the Ocean Navigation Congress (founded in 1889), PIANC promotes the development of inland and maritime navigation. Appointed study commissions work on projects that include the study of waves and seiches and their forces, development of oil tankers, sport and pleasure navigation, and shiplifts.

217. WOODROW WILSON INTERNATIONAL CENTER FOR SCHOLARS: WWICS

Established in Act of Congress (U.S.) in 1968, WWICS sponsors a fellowship program for 40 scholars, half of whom are appointed from countries outside the United States. In cooperation with other international organizations, it sponsors a continuing, selective, annotated bibliographic service covering the documentation and papers prepared for the UN Conference on the Human Environment. It also publishes other bibliographic works, including bibliographies relating to marine sciences.

218. WORLD DREDGING ASSOCIATION: WODA

An international organization founded in 1967 with members from 32 countries dedicated to the advancement of dredging technology, WODA sponsors international conferences, identified as WODCON or World Dredging Conferences.

219. WORLD ENVIRONMENT AND RESOURCES COUNCIL: WERC

A forum organized in 1973, WERC provides a means for exchange of information on the environment and Earth resources. At one time its proposed name was the World Environment Institute (WEI). WERC is composed of national organizations; the U.S. representative is the U.S. Environment and Resource Council (USREC).

220. WORLD FEDERATION FOR THE PROTECTION OF ANIMALS: WFPA

Established in 1950, WFPA protects the welfare of animals and relieves their suffering wherever possible. It makes an active effort in preventing the exploitation of seals and controlling their slaughter.

221. WORLD FEDERATION OF ENGINEERING ORGANIZATIONS: WFEO

Founded in 1968 to advance engineering as a profession, WFEO lends support to ECOR.

222. WORLD FEDERATION OF UN ASSOCIATIONS: WFUNA

A nongovernmental organization founded in 1946, WFUNA promotes the interaction of people with groups sponsored by the United Nations.

223. WORLD UNDERWATER FEDERATION: CMAS

Founded in 1959, CMAS stands for its French title, Confederation Mondiale des Activities Subaquatiques. Its purposes are to develop underwater activities and encourage inventions and new production in the field.

224. WORLD WILDLIFE FUND: WWF

Founded in 1961, WWF holds a conference every 3 years. Its purpose is to conserve world fauna, flora, forests, landscapes, water, soils, and other natural resources. Two of its major interests have been to conserve whales and to prevent the destruction of the ecology of the Island of Aldabra in the Indian Ocean.

C. JOINT GOVERNMENTAL AND NONGOVERNMENTAL ORGANIZATIONS

Intergovernmental and nongovernmental organizations often cooperate in areas of mutual concern. In the marine sciences, every effort is made to encourage this cooperation and members of one group are often invited to attend meetings of another group. From time to time representatives of two or more organizations may form a specialized group. Several are described below.

225. JOINT OCEANOGRAPHIC ASSEMBLY: JOA

A joint assembly of marine scientists held intermittently since 1959. Sponsors have been various interntional agencies working cooperatively and have included ACMRR, ACOMR (now MAOAO), CMG, ECOR, IABO, IAPSO, and SCOR, and meeting sites have been New York (1959), Moscow (1966), Tokyo (1970), and Edinburgh (1976). The first assem bly is often referred to as Ocean World.

226. JOINT ICES/ICNAF/IOC COORDINATING GROUP FOR THE NORTH ATLANTIC: NAT

An intersecretariat group established to coordinate the systematic studies of the North Atlantic, NAT meets biennially with the representatives of international marine research projects in the North Atlantic.

227. JOINT WORKING GROUP ON RIVER INPUTS TO OCEAN SYSTEMS: RIOS

Formed as a result of a GIPME resolution of 1971, RIOS includes members from ACMRR, ECOR, IAHS, and SCOR. Its programs include the identification of ongoing research pertaining to RIOS, execution of demonstration projects, training, and exchange of scientists.

228. WORLD SCIENCE INFORMATION SYSTEM: UNISIST

A joint UNESCO/ICSU effort organized in 1967, UNISIST studied the feasibility of a world science information system. Recommendations of the Central Committee, established to make the feasibility study, were published in 1971. The report concluded that the establishment of a world science information system is not only feasible but necessary. UNISIST is now a major component of UNESCO's General Information Program (GIP).

229. WORKING PARTY ON SCIENTIFIC ASPECTS OF INTERNATIONAL OCEAN RESEARCH: SAIOR

SAIOR was a joint group consisting of members from ACMRR, SCOR, and WMO.

D. DATA CENTERS AND OTHER FACILITIES

A number of international data centers, generally sponsored by one or more of the international organizations, have been established in selected areas. With the exception of the World Data Centers, each center is responsible either for specialized data or for data in a selected region.

230. AQUATIC SCIENCES AND FISHERIES INFORMATION SYSTEM: ASFIS

Proposed by FAO and IOC in 1971, and endorsed by IOC at its seventh session in 1971 and later by the U.N. Conference on the Human Environment, ASFIS has been developed with financial assistance from UNEP into an operating computer-oriented information system drawing on many different data sources to provide services of various types. At present ASFIS comprises three sponsoring bodies (FAO, IOC, and the United Nations) and national centers in the following countries: Canada, France, Federal Republic of Germany, Mexico, Portugal, U.S.S.R., United Kingdom, and the United States. FAO is the ASFIS coordinating center. The literature put into the system comes from 4,500 serial journal titles, reports, books, monographs, pamphlets, and information from seminars, workshops, and conferences all over the world and questionnaires distributed by the Secretariats. Products and services currently offered by ASFIS include: Marine Science Contents Tables (MSCT); Aquatic Sciences and Fisheries Abstracts

(ASFA); ASFA Related Tape Services; ASFIS World List of Periodicals in Marine and Freshwater Science; and ASFIS Register of Experts and Institutions. ASFA, which began in 1972, absorbed the former Current Bibliography for Aquatic Sciences and Fisheries (CBASF) produced by FAO and the Aquatic Biology Abstracts produced by Information Retrieval, Ltd. (IRL), London.

231. AZORES FIXED ACOUSTIC RANGE: AFAR

AFAR is an underwater acoustic facility established in 1973 with the encouragement of NATO by eight participating nations--Canada, France, Federal Republic of Germany, Italy, The Netherlands, Portugal, the United Kingdom, and United States. It is supervised by a steering committee composed of one member from each of the participating nations, an adviser from NATO, and senior staff members of the AFAR Directorate Office, the executive arm of the project.

The site, near Santa Maria Island in the Azores, was selected for its representative marine environment. Activities at the facility include the collection of acoustic and environmental data representative of deep ocean conditions.

232. CENTRO DE PRECLASIFICACION OCEANIA DE MEXICO: CPOM

Established in 1972, CPOM was a cooperative activity of UNESCO/IOC and the Mexican National Council for Science and Technology that sorted and stored biological samples. The center was established as a part of the Mexican contribution to CICAR.

233. FISHERY DATA CENTRE: FDC

Established within FAO, FDC is designated as a specialized world data center within the World Data Center System, responsible for fishery data collected during cooperative international expeditions sponsored by IOC and data collected as a part of IBP sponsored by ICSU. FDC also maintains inventories of specialized data holdings of other institutions such as biological sampling data and data pertaining to monitoring the harvesting of fish stocks.

234. INDIAN OCEAN BIOLOGICAL CENTRE: IOBC

Founded in 1962, IOBC receives, sorts, and distributes zooplankton samples collected during the International Indian Ocean Expedition (IIOE). While administratively a part of the Indian National Institute of Oceanography, IOBC receives support from UNESCO and ICSU/SCOR to handle data taken by the national expeditions participating in IIOE. It was the first of the three biological centers sponsored by UNESCO.

235. INTERNATIONAL SEISMOLOGICAL CENTRE: ISC

Established under the auspices of IUGG in 1964 and located at the University of Edinburgh, Scotland, ISC also receives support and direction from UNESCO and IASPEI. It is responsible for the collection and processing of worldwide seismological data and for the publication of related bulletins. To date, most of its activities have centered on the collection of information and publication of bulletins listing the occurrences of earthquakes, including those in marine areas.

236. INTERNATIONAL TSUNAMI INFORMATION CENTER: ITIC

Established by IOC in 1967, ITIC, located in Hawaii and working in close collaboration with the U.S. National Oceanic and Atmospheric Administration (NOAA), compiles and disseminates tsunami data

and information, organizes a visiting scientist program, and provides advice to developing countries on the establishment of national tsunami warning systems.

237. KUROSHIO DATA CENTRE: KDC

Established in 1964, KDC was sponsored by FAO (IPFC), INPFC, IAPSO, IOC, PSA, SCOR, and WMO. KDC, collocated with and operated by the Japanese Oceanographic Data Centre (JODC), acted as the Regional Data Center (RDC) for the Cooperative Study of the Kuroshio and Adjacent Regions (CSK).

238. MALTA POLLUTION CONTROL CENTER: MPCC

Established in 1976, MPCC is financed by UNEP and operated by IMCO. It is the repository for information relevant to oil pollution in the Mediterranean.

239. MARINE ENVIRONMENTAL DATA INFORMATION REFERRAL SYSTEM: MEDI

Proposed in 1975, MEDI is an automated, systematic method for recording and retrieving information and technical description of marine environmental data files that exist in international centers and national centers associated with an international network. MEDI is designed as the first step in the collection and organization of such data as may be required by agencies, scientists, and administrators--the systematic identification of what is available. IOC and numerous international organizations, such as WMO, FAO, ICES, IAEA, IHO, and UNEP, have joined together to operate as a MEDI network. The MEDI Co-ordination Centre is located in IOC. The Centre is aided by points of contact within each international organization.

240. MEDITERRANEAN MARINE SORTING CENTER: MMSC

Established in Tunisia in 1965 and terminated in 1974, MMSC was operated by the U.S. Smithsonian Institution. It functioned as the CIM Biological Center and cooperated with UNESCO in training technicians in the Mediterranean area in the fundamentals of evaluation of living marine resources.

241. MONITORING AND ASSESSMENT RESEARCH CENTRE: MARC

Sponsored by the Scientific Committee on Problems of the Environment (SCOPE) and the United Nations Environment Program (UNEP), MARC, located at Chelsea College, London, is exploring the feasibility of multipurpose monitoring by one station. It is developing training courses for monitoring the environment.

242. PHUKET MARINE BIOLOGICAL CENTER: PMBC

Established in 1971, PMBC is a cooperative venture between the governments of Denmark and Thailand. Located in Thailand, it serves as a research laboratory and training center for marine scientists from Thailand and other southeast Asian countries.

243. REGIONAL MARINE BIOLOGICAL CENTRE: RMBC

Established in Singapore in 1968, RMBC serves as a central depository for biological data taken during CSK. It is one of the three biological centers sponsored by UNESCO.

244. SERVICE HYDROGRAPHIQUE

Operated by the International Council for the Exploration of the Sea (ICES), the Service is responsible for storing and disseminating data falling in ICES areas of interest. It also served as

the Regional Data Center (RDC) for the Cooperative Investigations of the Northern Part of the Eastern Central Atlantic (CINECA), now terminated.

245. WORLD DATA CENTER: WDC

Established in 1957 by the International Council of Scientific Unions (ICSU), WDC's assemble and make available data collected by the varied and widespread observational programs of the International Geophysical Year (IGY). Original responsibility for supervision of the program was assigned to the Special Committee for the International Geophysical Year and later to the International Geophysical Committee (CIG). Upon the abolishment of CIG in 1963, responsibility for the world data centers was assigned to the ICSU Panel on World Data Centers (PWDC). Since the close of IGY, the centers' missions have been broadened to collect, catalog, archive, and exchange other data of international interest and to publish catalogs of holdings.

The United States, U.S.S.R., and several other countries have world data centers. Those in the United States are designated as WDC-A's, those in the U.S.S.R. as WDC-B's, and the rest, regardless of location, as WDC-C's. Each data center in each principal designated system, A, B, C, is responsible for an individual specialized field. The country in which the center is located is responsible for its financial support even though the system is international. All centers operate within the framework of the Guide to International Data Exchange through the World Data Centers, prepared by the former Comite International de Geophysique and published in 1965.

WDC's for oceanography are located in the United States and U.S.S.R. As yet, there is no WDC-C for Oceanography. WDC-A for Oceanography is collocated with and administered by the U.S. National Oceanographic Data Center, and WDC-B is in Moscow and is the responsibility of the Soviet Geophysics Committee. The National Academy of Sciences in the United States establishes policy guidance for WDC-A. WDC-B Oceanography also acts as the Regional Data Center (RDC) for the Cooperative Investigations in the Mediterranean (CIM), now in abeyance. Other world data centers of interest to oceanographers cover such topics as geomagnetism, longitude and latitude, meteorology and nuclear radiation, seismology, and tsunamis.

II. INTERNATIONAL PROGRAMS, PROJECTS, AND EXPEDITIONS

Cooperative studies of the oceans by two or more nations have existed for many years. However, the International Indian Ocean Expedition in 1961-63 is considered the first of the really large-scale cooperative programs.

Many programs or projects are lost in memory. The new entries include descriptions of those projects located in the literature reviewed for this publication. Most have acronyms or abbreviations; some do not.

246. ADRIATIC SEA EXPANDED REGIONAL OCEANOLOGICAL STUDIES: AS-EROS

To study pollution in the Adriatic Sea, AS-EROS is sponsored by ICSEM with Italy and Yugoslavia cooperating.

247. ALBATROSS

This joint United States-Soviet Union cooperative survey concerned plankton in the Gulf of Mexico and hydrography and fisheries of offshore waters of the North Atlantic between Capes Cod and Hatteras. Conducted in 1967 by the United States Bureau of Commercial Fisheries R/V ALBATROSS IV and the Soviet Ship R/V ALBATROSS under the auspices of ICNAF, the project was designed also to compare the data gathering and research techniques of both nations.

248. AMAZON EXPEDITION

A 1976 survey of the physical and biological phenomena of the Amazon River. Scientists from 13 countries participated.

249. ANTARCTIC RESEARCH PROGRAM: ARP

This program of scientific and engineering studies of Antarctica and surrounding oceans is coordinated by SCAR with participation by IGU, IUBS, IUGS, IUPAC, IUPS, IURS, and WMO. The program is of indefinite duration.

250. ARCTIC ICE DYNAMICS JOINT EXPERIMENT: AIDJEX

This cooperative study of ice deformation was begun in 1970 and terminated in 1976. It was supported internationally by AINA and ICSI. National participants were Canada, Japan, and United States. The University of Washington was the program coordinator in the United States.

251. ATLANTIC TRADEWIND EXPERIMENT: ATEX

In 1969 the Federal Republic of Germany, United Kingdom, and United States conducted this cooperative experiment to investigate air-sea interaction in the root region of the northeast tradewind zone of the Atlantic.

252. AUSTRALIA-NEW ZEALAND-UNITED STATES EDDY PROJECT: ANZUS

Conducted in 1975, ANZUS investigated the physical oceanography and underwater sound characteristics of eddies in the East Australian Current (EAC).

253. BAFFIN BAY NORTH-WATER PROJECT: BBNWP

Originated in 1966, the BBNWP, an ongoing project sponsored by the Arctic Institute of North America (AINA) and the International Commission of Snow and Ice (ICSI), consists of an exhaustive study of the polynya or semipermanent ice-free area in northern Baffin Bay. Programs in meteorology and biology as well as physical oceanography are included in the study of the polynya, also known as the North Water.

254. BALTIC OPEN SEA EXPERIMENT: BOSEX

Conducted in 1977, BOSEX was the largest joint international investigation in the Baltic to date. All seven countries bordering the Baltic participated in the Expedition, which was sponsored by the ICES/SCOR Working Group on the Study of Pollution in the Baltic. The program involved simultaneous observations of physical, chemical, and biological factors as well as levels of pollution in seawater, plankton, fish, and sediments.

255. BERING SEA EXPEDITION: BESEX

This joint Soviet Union-United States experiment studied microwave signatures of the atmosphere, ice, and open waters of the Bering Sea. The experiment, conducted in 1973, involved both surface and air vessels. A symposium on the results was held in the Soviet Union in 1974.

256. BIOLOGICAL INVESTIGATION OF MARINE ANTARCTIC SYSTEMS AND STOCKS: BIOMASS

A research program proposed by the SCAR Group of Specialists on Living Resources of the Southern Ocean, BIOMASS was accepted by SCAR in 1976 and preliminary programs were begun in 1978. The first major program, to commence in 1980 and end in 1981, known as the First International BIOMASS Experiment (FIBEX), will be a multiship large-scale acoustic survey to determine data regarding krill. The second program planned is known as SIBEX. Future subprograms, to continue through 1984, are being developed by active participants which include the ACMRR, IABO, IOC, and SCOR.

257. BLACK SEA EXPEDITION: BSE

A 2-month program of studies in the Black Sea conducted in 1969 by Turkish and United States scientists studied the chemical and biological interaction between the oxygenated surface water and the anoxic deep water, the origin and geological history, and the source and nature of sediments in the sea.

258. CANADA/U.S. COOPERATIVE SURVEY OF THE GULF STREAM: CANUS

Conducted in 1964, CANUS involved the area of the Gulf Stream between Bermuda and Long Island. Ships and aircraft were used. Participating agencies were the Bedford Institute of Oceanography in Canada, the Canadian Navy and Airforce, and the U.S. Naval Oceanographic Office.

259. CIRCULATION ET PRODUCTION A L'EQUATEUR ATLANTIQUE: CIPREA

A study of the Gulf of Guinea being developed by France's Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM) with participation invited from other interested nations.

260. COOPERATIVE BLACK AND MEDITERRANEAN SEAS STUDY: COBLAMED

A series of air/sea interaction studies of the Mediterranean and Black Seas, sponsored by NATO. Originated in 1969, the operations have continued periodically.

261. COOPERATIVE INVESTIGATIONS OF THE CARIBBEAN AND ADJACENT REGIONS: CICAR

Proposed by The Netherlands government and adopted by IOC in 1967, CICAR was a multination program managed by an International Coordination Group (ICG) under the aegis of IOC. FAO and WMO were also collaborating. An Operations Coordinator, located at the

Caribbean Marine Biological Institute (CARMABI), Willemstad, Curacao, was responsible for communications and coordination.

Investigations began in 1970 and extended through 1975; a final symposium was held in 1976. Objectives of the program were to understand the air/sea interaction; circulation into, out of, and within the Caribbean; marine chemistry and related biological processes; and water-sediment interface. In 1975, upon recommendation of the ICG for CICAR, the University of Puerto Rico performed a CICAR Intercalibration Experiment (CINTEX) as a part of CICAR.

A special data inventory form, known as CICARDI, was designed to indicate all unclassified data collected by participants. The U.S. National Oceanographic Data Center (NODC) was the Regional Data Center (RDC) for CICAR and processed standard (physical/chemical) oceanographic data. The Mexican Oceanic Sorting Center (CPOM) holds the biological data.

At the close of CICAR in 1976, plans were formulated to continue regional activities in the Caribbean under the direction of the newly organized IOC Association for the Caribbean and Adjacent Regions (IOCARIBE).

262. COOPERATIVE INVESTIGATION IN THE MEDITERRANEAN: CIM

A UNESCO meeting of experts in 1965 conceived of a Cooperative Study of the Southern Mediterranean (CSSM) based upon recommendations from ICSEM for a study of the influence of Atlantic waters upon the Southern Mediterranean and a request from MAMBO for a biological research program for the southwestern part of the Sea. When the proposal was presented to IOC in 1966, it was recommended that the program involve the whole of the Mediterranean and include the Black Sea. CIM was originally organized in 1969 under the joint sponsorship of FAO/GFCM, ICSEM, and IOC, as a multiship program covering all aspects of oceanographic research for the Mediterranean with special attention to the protection of the area. The program is currently in abeyance.

A Group for Technical Coordination (GTC), composed of representatives from the three sponsoring organizations, coordinated and supervised the logistical organization and provided technical assistance to participants as needed. An International Group for Scientific Coordination (IGSC), composed of experts nominated by the participating countries, was responsible for the scientific programs. IGSC was dissolved in 1975. The Operational Unit was located in Monaco. WDC-B for Oceanography was designated the Regional Data Center (RDC), and MMSC, now abolished, was the official biological sorting center. A newsletter, published at irregular intervals, described programs and accomplishments. CIM was also responsible for the International Bathymetric Chart of the Mediterranean (IBCM).

263. COOPERATIVE INVESTIGATIONS IN THE NORTH AND CENTRAL WESTERN INDIAN OCEAN: CINCWIO

IOC, at the tenth session of its assembly held in 1977, approved recommendations made in 1976 to initiate CINCWIO and decided to convene a meeting of the countries in the region to initiate planning, identify requirements, and coordinate the projects under the program. The meeting was held in March 1979. At the 11th session of its assembly held late in 1979, IOC formed a Technical Advisory Group (TAG) for CINCWIO.

264. COOPERATIVE INVESTIGATIONS OF A LARGE OCEAN GYRE: CILOG

This is a proposed program.

265. COOPERATIVE INVESTIGATIONS OF THE NORTHERN PART OF THE EASTERN CENTRAL ATLANTIC: CINECA

This program, begun in 1970 and terminated in 1978, aimed at determining the biological, chemical, geological, meteorological, and physical features, including fishery aspects, of the West African coastal areas. It was sponsored jointly by FAO (CECAF), ICES, and IOC; 13 national states participated. The Service Hydrographique of ICES acted as the Regional Data Center (RDC) and irregularly published a newsletter describing the program.

A subprogram, associated with CINECA, but later conducted independently by the United States with assistance from Spain, used satellites to study the upwelling in the area. Known originally as the Skylab Upwelling Experiments, it was renamed the Sahara Upwelling Experiment. The acronym SUE applies to both names.

266. COOPERATIVE PROGRAM OF RESEARCH ON AQUACULTURE: COPRAQ

Sponsored by the General Fisheries Council for the Mediterranean (GFCM) and coordinated by the European Inland Fisheries Advisory Committee (EIFAC), COPRAQ's purpose is the promotion of aquaculture in the Mediterranean area. One area of research is on factors hampering aquaculture.

267. COOPERATIVE STUDY OF THE KUROSHIO AND ADJACENT REGIONS: CSK

Conceived in 1962 at a meeting of the Marine Science Experts in East and Southeast Asia and approved by IOC in 1964, CSK had the prime objective of understanding the water exchange between the Kuroshio and the Pacific Ocean. In 1970, the area was extended to include the South China Sea. CSK terminated in 1977. A newly formed IOC Working Group for the Western Pacific (WESTPAC) is proceeding with plans to continue a cooperative marine science program in this area.

The program had 11 contributors. An International Coordination Group (ICG) was responsible for the coordination of the program. The Regional Data Center (RDC) was the Kuroshio Data Centre (KDC), which co-exists with the Japan Oceanographic Data Centre (JODC). Regional Marine Biological Centre (RMBC) at Singapore was responsible for the biological data.

268. COOPERATIVE SURVEY OF THE NORTHERN PACIFIC: NORPAC

A synoptic survey of the North Pacific Ocean north of latitude 20°N, NORPAC was made in 1955 by oceanographers from Canada, Japan, and United States. Data from NORPAC are in the U.S. National Oceanographic Data Center and also in the publication "Oceanographic Observations of the Pacific, 1955, the NORPAC Data," prepared by the NORPAC Committee and published by the University of California Press in 1960. The data report has an extensive bibliography of reports resulting from the survey. In addition, the Committee prepared an atlas of NORPAC information, also published by the University of California Press in 1960.

269. COOPERATIVE SURVEY OF THE PACIFIC EQUATORIAL ZONE: EQUAPAC

This oceanographic study of the Pacific was made where the equatorial undercurrent was known to exist. Conducted in 1956, the participants were France (the Noumea Oceanographic Centre, New Caledonia), Japan, and United States.

270. COOPERATIVE SYNOPTIC INVESTIGATIONS OF THE BALTIC: CSIB

An ICES-sponsored multination, multiship program to investigate the Baltic. The program was conducted in 1964 and received financial support from UNESCO.

271. CYANA-MEXIQUE: CYAMEX

An exploration of the East Pacific Rise (EPR) with participants from France, Mexico, and the United States. CYAMEX is patterned after FAMOUS and utilizes the French submersible Cyana. The first phase of CYAMEX, a study of the Rivera and Tamayo faults and known as RITA, was conducted in 1978.

272. EARTHWATCH

This worldwide environmental monitoring system was developed under the sponsorship of the United Nations Environment Program (UNEP). Its goals are to identify pollutants of international significance; coordinate monitoring of pollution levels around the world; investigate and compare the sources, pathways, and fate of pollutants in the environment; and establish standards for protection and procedures for determining pollution level limits. Monitoring goals of Earthwatch are implemented by a Global Environmental Monitoring System (GEMS), a coordinated effort to ensure that data on environmental variables are collected in an orderly and adequate manner. A plan of action for the monitoring of pollutants in open-ocean waters is being developed. The International Referral System (INFOTERRA, formerly IRS) was developed to supplement EARTHWATCH.

In 1976 UNEP and WHO established a data bank called the International Register of Potentially Toxic Chemicals (IRPTC) to be closely associated with Earthwatch. Resources to IRPTC will be made available through other international and national agencies. Earthwatch also cooperates closely with other environmental programs such as the First GARP Global Experiment (FGGE), the Integrated Global Ocean Station System (IGOSS), and World Weather Watch (WWW). Among the other international agencies participating in Earthwatch are FAO, ICES, IOC, and WMO.

273. EASTERN TROPICAL PACIFIC COOPERATIVE SURVEY: EASTROPIC

In 1955, Peru and United States made this survey of the currents and productivity of the equatorial countercurrent, the equatorial undercurrent, and the northern boundary of the Peru current.

274. EL NINO PROJECT

Sponsored by the Inter-American Tropical Tuna Commission (IATTC) with participation from IATTC member nations,the El Nino Project was conducted from 1963 to 1966. Its purpose was to test the several theories relating to the phenomenon known as El Nino of unusual oceanographic conditions off the east coast of South America between January and April and at periodic intervals of 2 to 12 years. The phenomenon consists of warm surface waters moving into normally temperate coastal regions and leading to the wholesale destruction of marine animal and plant life.

In 1965-66 the project expanded to include the Augmented Colombian El Nino Tuna Oceanography (ACENTO), an extension of a Colombian work to include a lengthier study of the Panama Bight area where the abundance of tuna and the environment vary seasonally.

275. ENGLISH-FRENCH GEOLOGICAL MAPPING OF THE SEABED BENEATH THE ENGLISH CHANNEL: GEOMANCHE

This cooperative program to map the seabed beneath the English Channel originated in 1970. The first map sheets were available in 1973. Participants are the French Bureau de Recherches Geologiques de Minieres (BRGM) and the Centre National d'Exploration des Oceans (CNEXO); and the British Institute of Geological Sciences (IGS), Bristol University, and the University College in London.

276. FIRST INTERNATIONAL SATURATION STUDY OF HERRING AND HYDRO-ACOUSTICS: FISSHH

An underwater research mission conducted by the National Marine Fisheries Service (NMFS) of the United States in cooperation with the Federal Republic of Germany and using their underwater laboratory, HELGOLAND. The study is being made off Rockport, Mass.

277. GLOBAL NETWORK FOR ENVIRONMENTAL MONITORING: GNEM

This proposed network would be capable of measuring biological and physical parameters to establish ecological baselines that will lead to a better understanding of human impact on the biosphere. Coordinating agencies as proposed include ICSU and UNEP.

278. GLOBAL NETWORK FOR MONITORING THE BIOSPHERE: MABNET

Proposed is a global network of environmental monitoring eco-stations, together with a communication network, an extensive data storage and retrieval system, and an international biosphere research center to develop ecosystem models for evaluating human impact on the environment and to develop plans for the rational management and conservation of the natural resources of the environment.

279. ICE SHELF DRILLING PROJECT: ISDP

Proposed by the SCAR Group of Specialists on Ice Shelf Drilling Projects, the ISDP porogram was accepted by SCAR and the first project, the Ross Ice Shelf Project (RISP), is being developed.

280. INTEGRATED GLOBAL OCEAN STATION SYSTEM: IGOSS

This cooperative program provides more extensive and timely ocean information and predictions of the state of the ocean and its interaction with the atmosphere, and supports research on ocean processes. IGOSS was conceived in 1967 and has been developed jointly by IOC and WMO to meet the need for global oceanographic information comparable to the meteorological information supplied by the World Weather Watch (WWW).

The IGOSS General Plan and Implementation Program for Phase I was adopted by IOC and later by WMO in 1969. The 1977-1982 plan was adopted by both in 1977. Organizations developed to implement IGOSS are described in entry 39.

IGOSS is intended to be an amalgamation of national environmental monitoring and prediction systems brought together as a dynamic worldwide system for measuring or observing the marine environment. The system, known as the IGOSS Observing System (IOS), will include expanded monitoring of the oceans from ships, buoys, aircraft, satellites, and shore or island-based stations. The basic component of IOS is collectively known as the IGOSS Basic Observation Network Design (IBOND). The IGOSS Data Processing and Services System (IDPSS) will provide an international basis for preparation of oceanographic analyses and forecasts by World Oceanographic Centres (WOCs), Specialized Oceanographic Centres (SOCs), and National Oceanographic Centres (NOCs), each of which has specific functions regarding the kind of data to be processed. Important to the system is the archiving and retrieval of IGOSS data. World Data Centers A and B for Oceanography (WDC-A and -B), responsible National Oceanographic Data Centers (RNODC's), and National Oceanographic Data Centers (NODC's) have been assigned specific procedures for handling IGOSS data. The procedures are outlined in the Manual on IGOSS Data Archiving and Exchange. IGOSS also provides for predictions of significant characteristics of the marine environment and the development of ocean behavior models for improved predictions. The IGOSS Pilot Project

for the Collection, Exchange, and Evaluation of Bathythermograph Data (BATHY Pilot Project) was conducted from 1972 to 1975. In 1975 it was converted into a permanent program called the IGOSS Operational Programme for the Collection and Exchange of Oceanographic Data (BATHY and TESAC). Operational instructions for the program are contained in the Guide to Operational Procedures for the Collection and Exchange of Oceanographic Data (BATHY and TESAC). The Marine Pollution (Petroleum) Monitoring Pilot Project (MAPMOPP) began in 1975 and continued through 1978. The IGOSS General Plan and Implementation Program for 1977-82 includes a pollution monitoring program linked to GEMS/EARTHWATCH. Operational istructions for this project are contained in the Guide to Operational Procedures for the IGOSS Pilot Project on Marine Pollution (Petroleum) Monitoring. IGOSS will include pilot experiments in select ocean areas where its products can be applied to oceanic analyses and forecasts relating to the determination of fish distribution and in support of scientific experiments.

Essential to IGOSS is the means for rapid communication of data. To assist, the 1967 World Administrative Radio Conference (WARC) allocated radio frequencies for the transmission of ocean data. In 1974, the World Maritime Administrative Radio Conference (WMARC) agreed to the retention of these HF bands.

281. JOINT AIR/SEA INTERACTION EXPERIMENT: JASIN

A separate IGOSS program, JASIN, included experiments on the mixed layer and seasonal thermocline in the Atlantic Ocean. JASIN I, a preliminary program, was held in 1972; its participants were the United Kingdom and the United States. JASIN II was conducted in 1977-78, and its participants were Canada, the Federal Republic of Germany, and the Netherlands.

282. INTERNATIONAL COOPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC: ICITA

At its first meeting in 1961, the Intergovernmental Oceanographic Commission (IOC) considered a proposal for a cooperative study of the tropical Atlantic and Gulf of Guinea. The proposal was adopted at the 1962 sessions of the Commission and became the first international cooperative investigation to be organized by the newly established IOC. Investigations taken include measurements of physical, chemical, biological, meteorological, geological, and geophysical aspects of the areas. The studies were in three phases, known as EQUALANT I, II, and III. The first two phases were in 1963, and the third in 1964. Ten nations participated in one or more of the phases. Associated with EQUALANTS II and III was the Guinean Trawling Survey, described in entry 229.

Data from the investigations are in the archives of the U.S. National Oceanographic Data Center (NODC). Results of the three are published in NODC's General Series of publications, numbers 3, 5, and 7, respectively.

283. GUINEAN TRAWLING SURVEY: GTS

Conducted in 1963-64 to correspond with phases II and III of EQUALANT, GTS consisted of trawling surveys of the continental shelf and Gulf of Guinea. The Commission for Technical Cooperation in Africa South of the Sahara (CCTA) was the primary sponsor; UNESCO and its IOC, and FAO assisted. The Department of Technical Cooperation of the United Kingdom and the United States Agency for Economic Development provided principal funding.

Bathythermograph and oceanographic station data taken during the GTS were processed by and are available from the U.S. National

Oceanographic Data Center (NODC). They are also available in a separate report prepared by NODC and published by the Scientific, Technical, and Research Commission of the Organization of African Unity (OAU/STRC), successor to the CCTA. The report, entitled "Report on the Guinean Trawling Survey, volume III, Data Report," is OAU/STRC publication no. 99. It is also no. 8 in the NODC General Series.

284. HISTORICAL SEA SURFACE TEMPERATURE DATA PROJECT: HSSTD

This WMO-sponsored project aims to prepare and publish monthly means of meteorological data over ocean areas for the period 1860-1960, where data are available. Four countries, Federal Republic of Germany, The Netherlands, United Kingdom, and United States, have the bulk of the data and are participants.

Marine meteorological data collected since 1960 are being published in a series of "Marine Climatological Summaries." Nine member nations are participating in these publications under the direction of WMO. Several summaries have been published to date.

285. INTERNATIONAL BALTIC YEAR: IBY

In 1969 and 1970, a series of expeditions were made by research vessels from all Baltic countries with support from the International Council for the Exploration of the Sea (ICES) and the Conference of Baltic Oceanographers (CBO).

286. INTERNATIONAL BIOLOGICAL PROGRAMME: IBP

UNESCO and ICSU sponsored IBP, which was established in 1966. ICSU in turn created a Special Committee to supervise the program (SCIPB). The program included many subprograms. Those dealing with marine productivity were referred to as IBP/PM. IBP was concluded in 1974. The Man and the Biosphere Program is being designed to continue many projects initiated during IBP.

One of the marine productivity subprograms was the Upwelling Biome Integrated Research Program, conducted in March 1972 off the coast of Punta San Hipolito, Baja California. Also called the MESCAL program, it was one of the forerunners of the Coastal Upwelling Ecosystem Analysis (CUEA) program of the International Decade of Ocean Exploration (IDOE).

287. INTERNATIONAL COOPERATIVE EFFORT TOWARD UNDERSTANDING OF THE EASTERN TROPICAL PACIFIC OCEAN: EASTROPAC

A cooperative survey of the Eastern Tropical Pacific Ocean was conceived at the 1960 meeting of the Eastern Pacific Oceanographic Conference (EPOC), an advisory group of U.S. oceanographers. The concept of the survey was supported by IOC in 1961, and the first scheduled cruise was in 1967. Other participants included the Inter-American Tropical Tuna Commission (IATTC) and the five member governments of IATTC at that time.

The U.S. National Marine Fisheries Service has published a comprehensive 11-volume Atlas incorporating data from the cruises. Following production of the atlas, the data were forwarded to the U.S. National Oceanographic Data Center for archiving.

288. INTERNATIONAL GEODYNAMICS PROJECT: IGP

Established in 1970 at the instigation of IUGG and IUGS and administered by the ICSU Inter-Union Commission for Geodynamics (IICG), the project is in a sense a successor to the Upper Mantle Project (UMP). It was conceived as a result of the new premises

regarding continental drift, plate tectonics, and ocean floor spreading, and the concept achieved during UMP on the need for continuing close collaboration of Earth scientists of all types. Over 50 countries participated in IGP programs which included studies of the ocean floor, the continental shelves, and ocean-continent tectonic correlations. IGP ended in December 1979. A new program to continue this research was approved by ICSU in September 1980. Formally titled Dynamics and Evolution of the Lithosphere: the Framework for Earth Resources and the Reduction of Hazards, it is commonly called the International Lithosphere Program. It is directed by the International Commission on the Lithosphere (ICL).

289. INTERNATIONAL GEOPHYSICAL YEAR: IGY

One of the largest global science research programs, and one of the first, IGY consisted of cooperative investigations of the Earth's interior, crust, and oceans. It was recommended in 1950, approved by ICSU in 1951, undertaken from July 1, 1957, to December 31, 1958, and continued during 1959 when it was known as the International Geophysical Cooperation or IGC. ICSU established a special committee, known as CSAGI, to coordinate the scientific planning of IGY, and data from the many programs were deposited in the newly created World Data Centers (WDC's) supervised by CSAGI.

Programs in oceanography centering on shore-based operations were mainly directed to determine the sea-surface oscillations of frequencies between one per year and one per minute. Strategic locations, designated as "Island Observatories," were chosen to expand observations of tidal oscillations. Serial observations, that is, the measurement of water temperature and salinity to a depth of 900 feet, were also taken in the vicinity of the island observatories. The deepwater observations, taken from ships, included standard hydrographic work, continuous bathymetry, and marine geology, with the emphasis placed on obtaining better information on the general circulation of the oceans, particularly that of subsurface currents.

290. INTERNATIONAL HYDROLOGICAL DECADE: IHD

A UNESCO-sponsored program designed to promote cooperation in developing hydrological research techniques, to disseminate hydrologic data, and to plan for hydrological installations. The Decade, 1965-74, was administered by a Coordinating Council selected at the general conference of UNESCO together with members from the other participating agencies, which included WMO, IAEA, WHO, and FAO of the United Nations; and IAHS, IAH, and IBP of ICSU. IAHS was the principal scientific adviser. One of the panels for IHD was the Panel on Systems for the Acquisition, Transmission, and Processing of Hydrological Data, known as SAPHYDATA. Entry 291 describes one of the IHD subprograms.

291. INTERNATIONAL FIELD YEAR FOR THE GREAT LAKES: IFYGL

Subprograms within IHD were generally performed at the national level, though two or more nations could cooperate in a program of mutual concern. One such program was the International Field Year for the Great Lakes (IFYGL), established jointly by Canada and the United States. IFYGL went into operation in 1972 and consisted of a multidisciplinary survey of Lake Ontario. Purposes of the survey were to understand the drainage basin, to ensure that its waters will remain sufficient in quantity and quality, and to assist operations affected by the environment.

292. INTERNATIONAL HYDROLOGICAL PROGRAM: IHP

In 1972, to ensure continuing cooperative research in hydrology, the Coordinating Council of IHD approved an International Hydrological Program to begin in 1975 at the close of IHD. Objectives of IHP include investigations of large-scale processes of moisture transfers; quantitative and qualitative assessments of the effects of human activities on the water cycle; dissemination of information on new methods for measuring, computing, and forecasting water balance elements; and education and training of people in hydrology and the field of water resources. Details for IHP were worked out at the End-of-the-Decade Conference held in September 1974.

293. INTERNATIONAL INDIAN OCEAN EXPEDITION: IIOE

Conceived by SCOR in 1957 as a large-scale, multination, multiship, multidisciplinary coordinated study of the Indian Ocean, IIOE lasted from 1959 to 1965. In 1962, responsibility for coordinating the program was transferred to IOC; SCOR retained an advisory role regarding scientific disciplines. WMO and FAO also participated.

An Indian Ocean Biological Centre (IOBC) was established in Cochin in 1963 to serve as a sorting station for zoological samples. An International Meteorological Centre (IMC) was established in Bombay under the supervision of WMO to handle meteorological data. Copies of all data are in or will be sent to the two world data centers for oceanography.

Numerous publications relating to IIOE have or are being compiled. UNESCO has published an eight-volume series of collected reprints, accompanied by a separate index, based on the research. Atlases showing physical/chemical oceanographic data, geology, and meteorological data are now available.

294. INTERNATIONAL INDIAN OCEAN FISHERY SURVEY AND DEVELOPMENT PROGRAMME

The programme, which was proposed in 1971, is sponsored by IOFC/FAO and funded by UNDP.

295. INTERNATIONAL PHASE OF OCEAN DRILLING: IPOD

IPOD had its origins in the Deep Sea Drilling Project (DSDP) sponsored by the U.S. National Science Foundation (NSF). It began in 1968 and was largely conducted by the Scripps Institution of Oceanography (SIO) with technical support and advice from the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). Since 1973 a number of other countries have participated in the program, renamed the International Program of Ocean Drilling (IPOD) to reflect this international cooperation.

IPOD was scheduled to end in 1979. However, with the many improvements in ocean drilling technology being developed, a conference on the Future of Scientific Ocean Drilling (FUSOD) was held in 1977, and recommendations were made to extend IPOD into the 1980's.

296. INTERNATIONAL WEDDELL SEA OCEANOGRAPHIC EXPEDITION: IWSOE

The first IWSOE was conducted from 1968 to 1970 and consisted of physical, biological, geological, and current observations in the southern Weddell Sea where the major portion of the Antarctic Bottom Waters (AABW) originate. Argentina, Norway, and United States participated.

A second IWSOE was held in 1975 to extend the physical oceanographic investigations to the unexplored western part of the Sea and to set two long-term current meter moorings in the northern part of the Sea.

297. JOINT INVESTIGATION OF THE SOUTHEASTERN TROPICAL ATLANTIC: JISETA

This joint Angola-United States program studied the ecology of the tropical Atlantic tuna off the coast of Africa from the Equator to latitude 17°S. Conducted in 1968, the program centered on the relation between the distribution of surface schooling tunas and seasonal environmental changes. Physical/chemical data are included in the U.S. National Marine Fisheries Service Data Report No. 82.

298. JOINT NORTH SEA INFORMATION SYSTEM: JONSIS

Originated in 1970, JONSIS is a joint Belgium, British, Dutch, German Federal Republic, and Swedish effort to develop a network of moored ocean data stations to collect data for the mathematical modeling of North Sea circulation. The group working on the project is known as the Joint North Sea Modeling Group (JONSMOD). By 1971, a pilot network of 24 stations was operational, serving as a test for practical problems of data recording and exchange. Since its inception, the project has been expanded to include the establishment of a network of permanent installations for providing data related to a number of oceanographic and meteorological problems. The project coordinator is the Study Committee on Ocean Data Stations (SCODS) of the United Kingdom's Natural Environment Research Council (NERC).

The program of deployment of the tide gages and current meters is known as the Joint Oceanographic North Sea Data Acquisition Programme (JONSDAP).

The first phase was called JONSDAP '73. A 1976 continuation, called JONSDAP '76, included two subprograms: FLEX, also called FLEX BOX, consisting of an investigation of coupled biological, chemical, and interaction processes in the Fladden Ground area during the first spring heating and the beginning of the spring plankton bloom; and INOUT, a study of the inflow and outflow as well as the modeling of tidal and residual circulation, originally conducted at the northern boundary of the North Sea and later enlarged to include the whole of the North Sea. JONSDAP terminated with the 1976 program.

299. JOINT NORTH SEA WAVE ANALYSIS PROJECT: JONSWAP

A study of the relation between surface waves and prevailing wind conditions, JONSWAP features cooperative gathering of data from sensors placed on towers and buoys in the sea and from aircraft overflights.

Planning for JONSWAP began in 1968, and trial experiments were made in 1973. Extensive operations were held in the summer of 1975. Data from JONSWAP will be used in the North Sea Wave Model (NORSWAN), an international cooperative project developed by the British.

300. JOINT SKAGERRAK EXPEDITION

The multiship, multination expedition sponsored by ICES with financial support from UNESCO was undertaken in 1966 to explore the Skagerrak. Current and chemical data as well as standard oceanographic data were taken.

301. JOINT UNESCO-IUGS INTERNATIONAL GEOLOGICAL CORRELATION PROGRAM: IGCP

Organized in 1972. IGCP is a cooperative program consisting of many subprograms. Its objective is a better understanding of the geology of the Earth, including that of the ocean floors, and a better knowledge of mineral resources through regional, interregional, and intercontinental correlation of geological formations and phenomena.

302. LONG-TERM AND EXPANDED PROGRAM OF OCEANIC EXPLORATION AND RESEARCH: LEPOR

LEPOR is the scientific program that IOC adopted at its ninth session in 1969. The first phase of LEPOR, known as the acceleration phase, is the International Decade of Ocean Exploration (IDOE), which incorporates all projects to be carried out during the decade 1971-80. Entries 303 through 324 describe these projects.

The broad purpose of LEPOR is '. . . to increase knowledge of the ocean, its contents, the contents of its subsoil, and its interfaces with the land, atmosphere, and ocean floor, and to improve understanding of the processes operating in or affecting the marine environment with the goal of enhanced utilization of the ocean and its resources for the benefit of mankind."

303. INTERNATIONAL DECADE OF OCEAN EXPLORATION: IDOE

IDOE was proposed by the United States in 1968 and accepted internationally in the same year as the acceleration phase of LEPOR. IDOE consists of national programs that are so comprehensive and so large that participation of scientists is actively sought. IDOE can be coordinated through bilateral, multilateral, regional, or broad international arrangements. The Decade is to last from 1971 to 1980. Plans to continue cooperative programs in the post-IDOE are curently under review.

IDOE programs generally fall into one of four major areas. Those identified to date are described according to the major area.

Environmental Quality

Major research areas for the IDOE program in environmental quality include baseline data collection, studies of the transfer and effects of pollutants, and the use of geochemical analysis in the study of diffusion, mixing, and large-scale ocean circulation. Entries 304 through 311 describe the programs identified to date.

304. GLOBAL INVESTIGATION OF POLLUTION IN THE MARINE ENVIRONMENT: GIPME

A comprehensive plan, GIPME was proposed by IOC's GELTSPAP and accepted in 1972. An IOC International Coordination Group, later replaced by a Working Committee, finalized the plans in 1976. The plan provides for an internationally coordinated research program that will develop criteria for marine pollution monitoring. Studies being developed include baseline studies; terrestrial, atmospheric, and river inputs of pollutants to the oceans; process-determining pathways and distributions of pollutants; mass balances of pollutants; close-response relations between pollutants and marine organisms; bioaccumulation of pollutants; monitoring biological effects; long-term effects of pollutants on marine ecosystems; periodic review of the state of "health" of the ocean; the organization of laboratory networks; the development of training programs; and the exchange of scientific data.

305. CONTROLLED ECOSYSTEM POLLUTION EXPERIMENT: CEPEX

A 6-year program, announced in 1973, CEPEX is to learn how pollutants affect plant and animal life in the world oceans. Specifically, the program will study the effects of chemical pollutants on plankton. Canada, United States, and United Kingdom are participating, and test sites are in British Columbia, Canada, and Scotland. Associated with CEPEX is the term "Controlled Experimental Ecosystem (CEE)," a plastic cylinder in which water is impounded and studied during CEPEX experiments.

306. GEOCHEMICAL OCEAN SECTION STUDY: GEOSECS

A global program for studying oceanic processes, GEOSECS included the measurement of all important geochemicals and the study of their relation to large-scale ocean circulation problems. The Atlantic Ocean Study was held in 1972-73, the Pacific Ocean Study in 1974-75, and the Indian Ocean Study in 1975-76. The latter is also referred to as INDOCHEM. Participating countries included Belgium, Canada, Federal Republic of Germany, France, India, Japan, United Kingdom, and United States. A GEOSECS Operations Group was known as GOG.

307. BIOLOGICAL EFFECTS PROGRAM: BEP

Initiated in 1973, BEP, conducted by U.S. scientists, was terminated in 1978. Its purpose was to evaluate sublethal low-level effects of trace metals, petroleum, chlorinated hydrocarbons, and phthalates on the growth, behavior, and biochemical processes of several classes of marine organisms.

308. GULF UNDERWATER FLARE EXPERIMENT: GUFEX

An IDOE field program, GUFEX was designed to study the effects of aliphatic and aromatic hydrocarbons (C_1 through C_{10}) on marine phytoplankton with program components involving the fates and transfers of these hydrocarbons in and between the various geospheres and the biosphere. It was conducted off the coast of Louisiana.

309. POLLUTANT RESPONSES IN MARINE ANIMALS: PRIMA

Initiated in 1978, PRIMA coordinates several of the efforts of BEP with new products. It focuses on the development and evaluation of a set of physiological, biochemical, and morphological criteria that can be used to assess the health of marine animals. Results of PRIMA will establish biological indicators that will provide an early warning of pollutant stress in the marine environment.

310. POLLUTANT TRANSFER PROGRAM: PTP

Initiated in 1972, PTP is concerned with the processes that transfer pollutants from land sources to the oceans and the movement and concentration of pollutants in the oceans. Objectives include the identification of important transfer pathways and mechanisms; the evaluation of major environmental factors influencing transfer processes; and the development of principles governing the transfer of pollutants.

311. SEA/AIR CHEMICAL EXCHANGE: SEAREX

SEAREX is a program to explore the sources and concentrations of inorganic and organic, manmade and natural chemicals found in air over the ocean; to find how these chemicals exchange with the sea; and to find the rate they move from the air to the ocean and from the ocean to the air. Major field experiments will begin in 1979 on islands in the trade-wind belts of the North and South Pacific. A sampling control system developed for the program and known as the Automated System for the Control of Atmospheric Sampling (ASCAS) will be connected to a computer-based Meteorological Integrating Data Acquisition System (MIDAS). A study of particle transport into the atmosphere by breaking bubbles will be carried out by using the Bubble Interfacial Microlayer Sampler (BIMS), developed for the program. France and United States are the participants. The University of Rhode Island serves as the SEAREX Data Analysis Center.

Environmental Forecasting Program

The purpose of this program is to provide the scientific base necessary for an improved capability to predict changes in the environment. Understanding the state of the oceans and the conditions in the atmosphere is critical for long-range and accurate environmental forecasting. Four major programs to date focus on these areas and are described in entries 312 through 315.

312. CLIMATE: LONG-RANGE INVESTIGATION, MAPPING, AND PREDICTION STUDY: CLIMAP

A U.S.-sponsored project, CLIMAP aims to understand and describe climatic changes over the past 700,000 years by recreating surface ocean changes associated with glacial and interglacial transitions using ocean sediment cores.

313. INTERNATIONAL SOUTHERN OCEAN STUDIES: ISOS

Proposed by the U.S. Committee on Polar Research, ISOS as recommended will consist of many field studies of ocean dynamics and monitoring and will cooperate closely with the Global Atmospheric Research Program (GARP) and its subprogram, the Polar Experiment in the Southern Hemisphere (POLEX-SOUTH). IOC is collaborating in the development of the program through its International Coordination Group for the Southern Oceans (SOC). Preliminary planning began in 1973.

The first field program, known as F DRAKE--First Dynamic Response and Kinematics Experiment in the Drake Passage--began in 1975 and terminated in 1977. It was concerned with a study of the Antarctic Circumpolar Current (ACCP). A Second Dynamic Response and Kinematics Experiment (S DRAKE) is planned for 1979. In 1978, a program to study the interaction of the ACC with the Macquarie Ridge was included in ISOS. Known as the Ridge Interaction and Downstream Gradient Experiment (RIDGE), it involved a cluster array of current meters operated by the New Zealand Oceanographic Institute (NZOI) in cooperation with the United States.

314. JOINT U.S.-U.S.S.R. MID-OCEANS DYNAMICS EXPERIMENT: POLYMODE

POLYMODE is a combination of two programs: the U.S.S.R. POLYGON project, a continuing series of experiments investigating mesoscale phenomena in the Atlantic and Pacific Oceans, and the Mid-Ocean Dynamics Experiment (MODE), a United States-United Kingdom experiment to investigate the role of medium-scale, geostrophic eddies in the general circulation of the oceans.

A Joint POLYMODE Organizing Committee (JPMOC) composed of representatives of the Union of Soviet Socialist Republics and the United States was established under the terms of the U.S.S.R.-U.S. Cooperation in Studies of the World Ocean. Other countries were invited to participate. Scientific advice is provided by SCOR's Working Group on Internal Dynamics of the Ocean, formerly the Working Group on Oceanographic Basis of Monitoring and Prediction Systems.

Preliminary testing experiments for MODE were conducted from 1971 to 1972 in a 2-degree square southwest of Bermuda at about 29°N 69°W. These, known first as Pre-Mode, were later redesignated as MODE-0 and MODE-I. The POLYGON site was at about 17°N 33°W. POLYMODE is now concentrated in the Western North Atlantic between about 5° and about 40°N. Field experiments include the Statistical Geographical Experiment designed to explore the nature of eddy phenomena and their geographic variability through the use of several moored arrays

spread widely throughout the western North Atlantic and the Local Dynamics Experiment (LDE), conducted in 1977 and 1978 at about 29°N 70°W to provide for a complete and detailed description of a local eddy field. POLYMODE's major field activities are coming to a close and analysis and interpretation of the data are expected to be accomplished in 1979-80.

315. NORTH PACIFIC EXPERIMENT: NORPAX

A program to study the long-period, large-scale interaction of the oceans and the atmosphere and to understand the processes responsible for air/sea coupling in the entire North Pacific, NORPAX was initiated in 1967 under the U.S. Office of Naval Research. Owing to its complexity, it was later cosponsored by the U.S. National Science Foundation and added to the IDOE program. It is now a U.S. project, but other interested nations are asked to participate.

The program includes the centralizing of a comprehensive data base for the North Pacific that includes bathythermograph and station data from the U.S. National Oceanographic Data Center, marine meteorological data from the U.S. National Climatic Center, and sea-level data from the Permanent Service for Mean Sea Level (PSMSL). Other sources of data are being sought.

One of the first of the NORPAX experiments is known as POLE. It covered a limited horizontal area of 200 square miles where intensive vertical samplings were taken to describe the intense wintertime interactions in thorough detail. POLE led to further plans for experiments covering larger areas of the ocean. POLE is a part of a larger program known as the Process Oriented Observation Program (POOP), whose purpose is to gain insight into the processes governing the thermal weather of the upper layer of the North Pacific Ocean.

Other NORPAX programs include AIRPAX, a field program begun in 1974 to take Aircraft Expendable Bathythermographs (AXBT) observations at fixed locations along long. 158° and 170°W between latitudes 30° and 50°N in order to describe and explain qualitatively the observed temporal and spatial fluctuations of the near-surface thermal field; TRANSPAC, a program initiated in 1974 to place observers on commercial ships crossing the Pacific to monitor the thermal structure of the mid-latitude Pacific; the Anomaly Dynamics Study (ADS), a program associated with TRANSPAC to study causes of changes in the thermocline structure of the Pacific; the Equatorial Dynamics Study (EDS) of the east-west current system in the low-latitude Pacific; and the Atmospheric Climate Study (ACS) to develop statistical/phenomenological models of the response of the atmospheric circulation to sea-surface temperature anomalies.

NORPAX's programs were expanded in 1977, during the First GARP Global Experiment (FGGE), to include investigations of the equatorial Pacific to provide a description of the processes that account for the low-frequency change in the heat content of the surface layer of the tropical Pacific.

Seabed Assessment Program

This program is designed to increase the understanding of the geologic processes active along the continental margins, the mid-oceanic ridges, and the deep ocean basins that generate raw materials needed by our civilizations. Individual programs are described in entries 258 through 261.

316. FRENCH-AMERICAN MID-OCEAN UNDERSEA STUDY: FAMOUS

A 3-year cooperative program of France and the United States to undertake a detailed study of the Mid-Atlantic Ridge and rift valleys, FAMOUS is using submersibles. Participating in the program are the Centre National pour l'Exploitation des Oceans (CNEXO) in France, and the Woods Hole Oceanographic Institution (WHOI), in the United States.

317. MANGANESE NODULE PROGRAM: MANOP

Formulated in 1972, MANOP studies have evolved into three phases: Phase I involved compiling existing manganese nodule data into a baseline for defining future field work; Phase II involved a series of cruises into areas of the northern equatorial Pacific where extensive deposits of nodules are located; and Phase III involves a detailed study of the influx, remobilization, and final disposition of transition metals supplied to the deep-sea floor of the central eastern Pacific.

A Bottom Ocean Monitor (BOM) package was developed, deployed, and recovered during Phase II. Deployed for 4 months, it contained a camera, current meter, and nephelometer for measuring suspended sediment concentration in the near-bottom water.

318. NAZCA LITHOSPHERIC PLATE STUDY

This is a detailed study of the processes of crustal formation and destruction that take place at the diverging and converging edges of a well-defined lithospheric plate. The Nazca Plate, selected for the study, is in the southeastern Pacific Ocean and borders the western coast of South America.

319. TRANSATLANTIC GEOTRAVERSE: TAG

Partly included in IDOE, TAG began in 1970 and lasted to 1974. The area traversed lies between Cape Hatteras in the United States and Cap Blanc on the west coast of Africa, the path calculated to be the track left by North America and Africa as the two receded from each other 200 million or so years ago.

320. CARIBBEAN ATLANTIC GEOTRAVERSE: CAG

Partly included in IDOE, CAG, completed in 1974, was a project to define plate margins through the identification and correlation of magnetic anomalies, interpretation of gravity and seismic reflection data, and observation of changes of sea-floor morphological provinces. Most of the tracklines for the project were oriented east-west between the Lesser Antilles and the Mid-Atlantic Ridge and were spaced about 36 km apart.

321. SOUTHWEST ATLANTIC CONTINENTAL MARGIN STUDIES: SWACM

A program, complete in 1976, SWACM gathered geological and geophysical data along the continental margin of South America from the Scotia Arc to the northeast coast of Brazil. The Brazilian portion of the program was known by the acronym REMAC--Reconhecimento da Margem Continental Brasileira.

Living Resources Program

The goal of the Living Resources Program is the improved understanding of the processes and relations that exist between the biological aspects of marine organisms and their chemical, physical, and geological environment. The program emphasizes the analysis of marine ecosystems. Entries 322 and 323 describe two programs established to date.

322. COASTAL UPWELLING ECOSYSTEMS ANALYSIS: CUEA

A program to develop simulation models of coastal upwelling ecosystems, CUEA aims to monitor a few key biological, oceanographic, and meteorological variables and predict how the system responds to change.

Six field experiments have been completed: CUE I and II (Coastal Upwelling Experiments) conducted off the coast of Oregon in 1972 and 1973, consisted of time series measurements of environmental variables and associated biological processes; MESCAL I and II, conducted in 1972 and 1973 off the coast of Baja California, consisted primarily of biological studies; and JOINT I and II. JOINT I, conducted in 1974, was an integrated biological and physical field study off the northwest coast of Africa. JOINT II, conducted off the coast of Peru in 1976-77, especially from March to May (MAM) 1977, was an intensive collaborative ecosystem study of the Peruvian upwellng region.

Other programs associated with CUEA projects off the coast of Oregon include OARS--Ocean Atmosphere Response Studies and SDP--Shelf Dynamics Program, a continuing program of current meter and sea-level measurements; and SYNAPSE, Synthesis and Publication Segment, which began after the completion of JOINT-II and will be the full CUEA project effort for about 2 years during which data processing and analysis, meetings and workshops, and publication efforts will be conducted for presentation of the data.

The Inter-Active Real-time Information System (IRIS), a shipboard computing system that acquires data in real time from an instrument array, constructs an image of the real-time environmental conditions, and represents the data graphically, was developed during CUEA.

323. SEAGRASS ECOSYSTEM STUDY: SES

Once referred to as the Seagrass Ecosystem Component Study (SECS), SES was begun in 1974 to provide information about the benthic marine ecosystem, particularly the dynamic processes by which sea grass ecosystems are maintained, their distribution, and their contribution to the seas. An International Seagrass Committee is responsible for collaboration of the program.

324. MARINE ECOSYSTEM STUDY IN TROPICAL AREAS: MESTA

Sponsored by Japan for inclusion in IDOE, MESTA began to be planned in 1975.

325. MAN AND THE BIOSPHERE: MAB

An ecological and interdisciplinary program, MAB was conceived during the 1968 UNESCO Conference on the Rational Use and Conservation of the Resources of the Biosphere and adopted in 1970. MAB includes several panels, one of which is concerned with the ecological effects of human activities on the value and resources of coastal zones, deltas, estuaries, lakes, marshes, and rivers, MAB is a continuing program, intended to be a follow-up to the International Biological Programme (IBP). It is sponsored by UNESCO, and many other international organizations are active participants; among these are FAO, ICSU/SCOPE, IUCN, WHO, and WMO.

326. MEDITERRANEAN ACTION PLAN: MAP

A UNEP-sponsored cooperative program for protecting the marine environment of the Mediterranean Sea, MAP was conceived at the 1972 Stockholm Conference and adopted in 1975. Participants include FAO/GFCM, ICSEM, IOC, and 17 of the 18 states bordering the Mediterranean.

One of the major programs approved for MAP is the Mediterranean Pollution Monitoring and Research Programme (MPMRP, or more popularly, MED POL). Ten pilot projects have been approved for MED POL, and work has begun on seven of them. They are identified as MED I, II, ... X and are largely conducted in beach or resort areas and areas where shellfish are produced.

Other components of MAP will include environmental management, negotiations for environmental laws, establishment of regional and subregional oil combating centers, standardizing measurements and analyses among participating countries, and training scientists, especially those in developing countries.

327. MEDITERRANEAN OCCIDENTAL SURVEY: MEDOC

Conducted in February and March 1969 with participation by France, Italy, the United Kingdom, and United States, MEDOC aimed to observe the process of deepwater formation in the Algerian-Provencal basin of the western Mediterranean Sea caused by the flow of continental air masses, which increases the density of the waters in winter by increasing salinity and lowering the temperature of surface waters.

328. NORTHEAST ATLANTIC DYNAMICS STUDIES: NEADS

Organized in 1976 and sponsored by SCOR, NEADS is complementary to and closely associated with POLYMODE. It consists of a number of subprograms concentrated in the northeast Atlantic and conducted by participating countries including Canada, France, Federal Republic of Germany, United Kingdom, United States, and Union of Soviet Socialist Republics.

329. NORTHWESTERN ATLANTIC ENVIRONMENTAL SURVEY: NORWESTLANT

An environmental study of the waters around Greenland in 1963, NORWESTLANT was sponsored by ICNAF. The study was to determine the distribution of redfish larvae, and cod eggs and larvae and associated environmental conditions. Reports and data resulting from the survey are published in the ICNAF Special Publication no. 7, which includes four parts: Part I, text and figures; Part II, atlas; Part III, data record in three volumes; and Part IV, biological data.

330. OVERFLOW PROGRAMS

Programs, sponsored by ICES, to study the overflow process of cold arctic water in the North Atlantic. The first, known as the "IGY Polar Front Survey," was conducted in 1957-58 and dealt with the hydrography in the North Atlantic. Two latter programs, designated "Overflow," are known as Overflow 1960, which concentrated on an investigation of the overflow over the Iceland-Faroe Ridge; and Overflow 1973, which studied the dynamics of water masses and their environmental significance in the Greenland-Scotland Ridge.

331. PERSPECTIVE STUDY OF WORLD AGRICULTURAL DEVELOPMENT: PSWAD

Originally established as the Indicative World Plan for Agriculture (IWP), PSWAD is an FAO-sponsored program to project and influence the future of agriculture and fisheries by improving technology. Included in the study is the World Appraisal of Fishery Resources (WAFR). As a part of the study, FAO is sponsoring or participating in several projects for studying coastal upwelling to gain a better knowledge of factors affecting fisheries.

332. PROGRAMME FOR THE ANALYSIS OF WORLD ECOSYSTEMS: PAWE

An outgrowth of the United Nations Conference on the Human Environment (UNCHE), PAWE will consist of a series of subprograms that are now being developed.

333. PROJECT LITTLE WINDOW

This was a cooperative calibration study to obtain information across the air-sea interface and extending into the troposphere so that that high-resolution infrared radiometer (HRIR) sensors aboard the satellites observing the area could be calibrated and a check made on their areal resolution. The field operations took place in March 1970 in the lower Gulf of California. Participants included IATTC, the Mexican Navy, United States National Oceanic and Atmospheric Administration, and United States Navy. IATTC processed the data.

334. REGIONAL POLLUTION STUDIES IN THE LIGURIAN SEA: RAMOGE

ICSEM sponsored RAMOGE; France, Italy, and Monaco participated.

335. RHODAMINE EXPERIMENT IN THE NORTH SEA: RHENO

An ICES-sponsored project in 1965, RHENO gained a deeper insight into how turbulence influences the characteristics of mixing of seawater. A large amount of Rhodamine-B dye was added to the seawater in the North Sea, and a number of strategically placed ships measured the resulting discolored patch to determine its spread and intensity.

336. RUMPHIUS EXPEDITION

Organized by the National Institute of Oceanography of Indonesia (Lembaga Oseanologi Nasional) in 1971, the expedition was conducted in 1973. It received support from UNESCO. Named in honor of Georgius Everhardus Rumphius (1627-1702), who contributed to the knowledge of flora and fauna of Malaku, its main objective was an inventory of the fauna of Malaku. Rumphius II is now being planned.

337. SOUTH ATLANTIC COOPERATIVE INVESTIGATIONS: SACI

A descriptive oceanographic expedition to survey the east coast of South America from 23° to 46°S, SACI was sponsored by IOC with participation by the Consejo Latino-Americano de Oceanografia (CLAO), Argentina, Brazil, and Uruguay. Phases of the expedition were labeled "TRIDENT." The expedition took place from 1962 to 1963.

338. SOUTH CHINA SEA FISHERIES DEVELOPMENT AND COORDINATION PROGRAMME

This aquaculture project, also called the South China Sea Project, is funded by the United Nations Development Programme (UNDP) and managed by the Indo-Pacific Fisheries Commission (IPFC). The program became operational in 1973. Participants are Indonesia, Khmer Republic, Malaysia, Republic of the Philippines, Singapore, Thailand, and the United Kingdom (Hong Kong).

339. UN PROGRAMME IN MARINE AND COASTAL TECHNOLOGY: MACTECH

A cooperative program for developing countries, MACTECH began in 1973 and was formulated in 1977 into regional and national programs to develop coastal areas. A major concern of MACTECH is increasing communications and coordination between existing programs. A referral service, the Marine and Coastal Technology Information Service (MACTIS), developed to serve as a focal point for MACTECH, is now a component of the Aquatic Sciences and Fisheries Information System (ASFIS).

340. UPPER MANTLE PROJECT: UMP

Also called the International Upper Mantle Project (IUMP), UMP was sponsored by ICSU and coordinated by the Upper Mantle Committee (UMC). Its projects included the seaward extension of the Transcontinental Geophysical Traverse of the United States and studies of the ocean floors. UMP originated in 1964 and terminated in 1970. Many of the theories it offered are being studied under the International Geodynamics Project (IGP).

341. WORLD MOLLUSCA CENSUS

Begun in June 1972 and conducted by the Paleontological Research Library, Charlotte, N.C., as a means of compiling field data on the marine biota of mollusca from the world's oceans. Data will be stored in the world data centers for oceanography.

342. WORLD WEATHER PROGRAM

Conceived by WMO in 1966, the program consists of a systems design and technological effort and two major subprograms, GARP and WWW, described in entries 343 through 353.

The goals of the World Weather Program are to extend the time range and scope of weather predictions, develop means for assessing the consequences to global environmental quality of man's pollution of the atmosphere, determine the feasibility of large-scale weather modification and the consequences of human interference with weather processes, and establish new bonds of international cooperation and joint activity to meet the needs of nations concerning atmospheric conditions.

343. GLOBAL ATMOSPHERIC RESEARCH PROGRAMME: GARP

Conceived by WMO in 1965 as a global experiment to study the general circulation of the atmosphere, GARP is a joint WMO/ICSU enterprise. GARP has many subprograms; because of the interaction between the atmosphere and the oceans, many, if not most, subprograms include activities with oceanographic interests. GARP programs may be national or international depending on how much interest nationals have in the various proposals. Programs, subprograms, and other terms associated with GARP are described in the entries 344-352.

A GARP Activities Office (GAO), established in 1975, manages the various GARP subprograms. Upon its creation, it undertook the management of GATE, formerly handled by an International Scientific and Management Group (ISMG). A Joint Organizing Committee (JOC) composed of scientists from ICSU and WMO establishes scientific goals and develops overall plans for GARP.

344. AIR-MASS TRANSFORMATION EXPERIMENT: AMTEX

A subprogram conducted in 1974 and 1975, AMTEX was originated by the Japanese. The purpose of AMTEX was to clarify the transfer processes by which energy and momentum are supplied from the sea surface to the air and transported to the free atmosphere through the planetary boundary layer. The area chosen for study is the East China Sea and the area surrounding the southwest Japanese Islands.

345. BARBADOS OCEANOGRAPHIC AND METEOROLOGICAL EXPERIMENT: BOMEX

Sponsored by the United States, initiated in 1967, and conducted in 1969, BOMEX had the primary goal of measuring the fluxes of heat, moisture, and momentum between the ocean and atmosphere using as many platforms as possible--ships, buoys, aircraft. Data from BOMEX were reduced by the Barbados Oceanographic and Meteorological

Analysis Project (BOMAP) and are available from the Environmental Data and Information Service of the U.S. National Oceanic and Atmospheric Administration.

Programs proposed for the continuation of BOMEX, known as the Global Oceanographic and Meteorological Experiment (GLOMEX) and the Tropical Oceanographic and Meteorological Experiment (TROMEX) were superseded by other GARP projects before they could materialize.

346. FIRST GARP GLOBAL EXPERIMENT: FGGE

Proposed as the Global Weather Experiment (GWE) but more commonly called the First GARP Global Experiment, FGGE is basically a period during which the entire atmosphere of the Earth is to be observed by data collecting stations including satellites, balloons, buoys, and ships. Some of the ships involved are Voluntary Observing Ships (VOS), not directly affiliated with a participating agency. A build-up year began in December 1977 and the FGGE Operational Year (FOY) or GWE Operational Year (GOY) began in December 1978 and ended in November 1979. Two intensive observing periods were carried out from January 15 to February 13 and from May 10 to June 8. A research and evaluation phase will extend into the 1980's.

A preliminary or Data System Test (DST) was performed by the United States in 1974. In 1977 South Africa and the United States participated in the Southern Ocean Float Experiment (SOFEX), whose purpose was to establish whether it would be feasible to launch and maintain free-floating buoys operating sensors for a sufficient length of time to be usable for FGGE. Special Tropical Wind Observing Ships (TWOS) and Synchronous Meteorological Satellites (SMS) were developed for FGGE.

347. GARP ATLANTIC TROPICAL EXPERIMENT: GATE

The first major subprogram of GARP involving international participation, GATE took place in 1974. Its purpose was to investigate the interaction of tropical weather systems and large-scale circulation systems in the Intertropical Convergence Zone (ITCZ), a 20-million-square-mile area extending from the eastern Pacific, across Latin America, the Atlantic Ocean, Africa, and ending in the western Indian Ocean. A GATE subprogram entitled GATE Equatorial Profiling Experiment (GEPE) was held in 1974. Preliminary experiments for GATE are known as the GATE International Sea Trials (GIST). A Boundary Layer Instrument System (BLIS) was designed for use during GATE. GATE was managed by an International Scientific and Management Group (ISMG), the Tropical Experiment Board (TEB), and the Tropical Experiment Council (TEC). The GATE Operational Control Center (GOCC) was at Dakar, Senegal. Subprogramme Data Centres (SDC's) for receiving GATE data include the Synoptic-Scale Subprogramme Data Centre (SSDC) at Bracknell, United Kingdom; the Boundary-Layer Subprogramme Data Centre (BSDC) at Hamburg, Federal Republic of Germany; the Convection Subprogramme Data Centre (CSDC) in Washington, D.C., United States; the Radiation Subprogramme Data Centre (RSDC) in Leningrad, U.S.S.R.; and the Oceanographic Subprogramme Data Centre (OSDC) in Brest, France. National Processing Centers (NPC's) are responsible for data taken nationally. Copies of all data processed either by the SDC's or the NPC's are on file in the two world data centers, A and B.

348. MONSOON EXPERIMENT: MONEX

The Monsoon Experiment, whose purpose is a study of the capability of using models to simulate the onset of the monsoon over Asia, includes two phases, Summer MONEX conducted December 1978 to March 1979, and Winter MONEX conducted May 1979 to August 1979.

It was preceded by the Indo-Soviet Monsoon Experiment (ISMEX) performed in 1973 within the framework of the GARP Air-Surface Interaction Subprogramme and by a 1977 experiment called MONSOON '77.

Subprogrammes of MONEX include the Indian Ocean Experiment (INDEX) and the West African Monsoon Experiment (WAMEX). INDEX began in 1975 and will continue through the major portion of MONEX. The Somali Current Monitoring System (SCMS) was a part of INDEX. INDEX also includes studies of the existence and behavior of the equatorial undercurrent, coastal and estuarine upwelling, and the fine thermohaline structure of the upper ocean.

WAMEX was planned by the WAMEX Scientific and Management Regional Commission (WSMRC). It was conducted at the same time as the summer phase of MONEX.

349. OBSERVING SYSTEMS SIMULATION EXPERIMENT: OSSE

This is a subprogram to evaluate observing subsystems such as satellites, buoys, and balloons, in terms of accuracy, density, and frequency of observations.

350. POLAR EXPERIMENT: POLEX

A Soviet-proposed program to determine the energy exchange between the temperate latitudes and the polar regions, POLEX will take place from 1975 to 1980. It is sometimes referred to as POLEX NORTH for the Arctic portion of the experiment and POLEX SOUTH for the experiments in the Antarctic regions.

351. TROPICAL EXPERIMENT: TROPEX

A Soviet program in preparation for GATE and FGGE, TROPEX consisted of a multiship program to study atmospheric circulation in the tropical Atlantic with emphasis on processes of convection and a study of the variability of physical parameters in the upper layers of the ocean and at the sea surface. Aerological, meteorological, and oceanographic observations were taken.

352. CLIMATIC DYNAMICS SUBPROGRAMME

A JOC/SCOR Joint Study Conference on General Circulation Models of the Ocean and Their Relation to Climate, held in May 1977, included recommendations for research into the vital role of the ocean in global climatic dynamics. GARP's Joint Organizing Committee is developing the subprogram.

353. WORLD WEATHER WATCH: WWW

A global observing, telecommunications, and processing system, WWW makes available to each member country of WMO the basic meteorological and related geophysical environmental data each requires. It is the basic system providing support for the WMO program, Interaction of Man and His Environment, and other WMO research programs.

Essential elements of WWW are: the Global Observing System (GOS) consisting of regional networks and other land, sea, atmospheric and space stations established to take necessary observations for WWW; the Global Data Processing System (GDPS) designed to make basic processed data obtained through GOS available through a system of world, regional, and national meteorological centers; and the Global Telecommunications System (GTS) designed for the collection, exchange, and distribution of observed data among national, regional, and world meteorological centers.

III. UNITED STATES NATIONAL ORGANIZATIONS

A. FEDERAL GOVERNMENT

Legislative Branch

354. CONGRESSIONAL COMMITTEES

Committees of both houses of Congress do most of the work of preparing and considering legislation. Each house has standing committees, special committees, and commissions.

The standing committees of the Senate most concerned with marine affairs are the Committees on Commerce, Science and Transportation; Energy and Natural Resources; and Environment and Public Works. These committees have jurisdiction over appropriate aspects of the Outer Continental Shelf (OCS) lands. The National Ocean Policy Study (NOPS), originally established in 1974 as the focus of Senate discussions on ocean matters, is under the Committee on Commerce, Science, and Transportation. The Committee on Foreign Relations, especially its Subcommittee on Arms Control, Oceans, International Operations, and Environment, also deals with marine affairs.

In the House of Representatives, major jurisdiction over marine affairs rests with the House Merchant Marine and Fisheries Committee (HMMFC or MM&F). HMMFC contains Subcommittees on Coast Guard and Navigation; Fisheries, Wildlife Conservation, and the Environment; Merchant Marine; and Oceanography; and an Ad Hoc Subcommittee on Maritime Education and Training. The House included the House Select Committee on the Outer Continental Shelf (HSCOCS) Until June 30, 1980, when this committee was terminated. Upon its dissolution, jurisdiction over OCS matters reverted to the standing committees.

355. LIBRARY OF CONGRESS: LC

Besides serving as a library depository and providing normal library reference services, LC operates the National Referral Center (NRC), which maintains a register of sources of information on scientific and technological activities of Federal and State agencies, professional societies, universities, colleges, industrial laboratories, and others engaged in research.

The Congressional Reference Service (CRS) is a separate office within LC. CRS functions exclusively for the legislative branch of the Government and provides information as requested. It is active in researching marine matters and often publishes reports on its findings.

356. OFFICE OF TECHNOLOGY ASSESSMENT: OTA

OTA was established by the Technology Assessment Act of 1972 to help Congress anticipate, and plan for, the consequences of uses of technology. It provides an independent and objective source of information about impacts, beneficial and adverse, of techological applications and identifies policy alternatives for technology-related issues. It includes an Ocean Assessment Program Manager and an Energy Assessment Program Manager. The latter is involved in programs relating to energy from the oceans.

Executive Branch

Office of the President

357. PRESIDENT'S SCIENCE ADVISORY COMMITTEE: PSAC

Established in the Office of Science and Technology in 1951 to advise the President, PSAC was composed of a number of panels, one of

which was the Panel on Oceanography (POO or PSACPOO) created in 1965 to assess current and planned oceanographic programs, identify opportunities for new programs, and recommend measures to effect new programs.

358. COUNCIL ON ENVIRONMENTAL QUALITY: CEQ

Established in 1970 under the authority of the National Environmental Protection Act (NEPA) of 1969, CEQ serves as the principal environmental advisory unit within the Executive Office of the President. It develops and recommends national policies to promote environmental quality, analyzes changes or trends in the national environment, and prepares the President's annual environmental quality report to the Congress. CEQ made the Floating Nuclear Power Plant study (FNPP) to determine the advisibility of putting floating nuclear powerplants in coastal waters.

Advisory and Interagency Bodies

Established by Congressional or Presidential action, advisory and interagency bodies are not limited to internal operations of an executive department or agency. Entries 359 through 363 describe those of major interest for marine scientists.

359. ADVISORY BODIES

The Marine Resources and Engineering Development Act (MREDA) of 1966 authorized the establishment of two complementary bodies, the National Council on Marine Resources and Engineering Development (NCMRED) and the Commission on Marine Science, Engineering and Resources (CMSER).

NCMRED was composed of Government officials (see entry 361); in contrast, CMSER was composed largely of advisers outside the Federal Government. Chaired by Julius A. Stratton of the Ford Foundation and more frequently referred to as the Stratton Commission, its aims were to formulate a national program for marine science affairs and to recommend a place for Government organizations in support of the program. Its plan was published in the report "Our Nation and the Sea," referred to as the "Stratton Report." Upon publication of the plan in 1969, the Commission ceased to exist.

NCMRED proposed the establishment of a National Advisory Committee on Oceanography (NACO). Its proposal was broadened to reflect the creation of the National Oceanic and Atmospheric Administration (NOAA), enacted by Public Law 92-115, dated August 16, 1971, which also authorized the establishment of the National Advisory Committee on Oceans and Atmosphere (NACOA). Originally to comprise 25 members, it was recently reorganized to 18 members appointed by the President from the private sector. It is responsible for a continuing review of the progress of marine and atmospheric science and service programs of the United States. It advises the Secretary of Commerce with respect to NOAA's mission and whether the mission is being fulfilled.

NACOA was directed to submit a comprehensive annual report to the President and Congress setting forth an overall assessment of the status of the Nation's marine and atmospheric activities. Its proposals include the establishment of an Institute for Engineering Research in the Oceans (IERO) to be administered by NOAA, the establishment of a Marine Affairs Council (MAC) at the cabinet level, and establishment of an independent agency for ocean and atmospheric sciences.

Another advisory board is the Outer Continental Shelf Advisory Board (OCSAB), established in 1975 and composed of representatives from the Departments of Defense, Energy, and Transportation, and the Environmental Protection Agency.

360. COMMISSIONS

The Marine Mammal Protection Act of 1972 (MMPA) authorized the establishment of an independent commission, known as the Marine Mammal Commission (MMC) to develop and review information, actions, and policies to obtain the objectives established by the Act. It comprises three members appointed by the President from the private sector, and in turn it may establish committees and appoint members to them.

361. INTERAGENCY BODIES

The Interagency Committee on Oceanography (ICO) was established in 1960 to develop a National Ocean Program (NOP). It supported a number of committees or panels including the Coordinating Committee on Oceanography (CCO), the Marine Biology Sub Panel, the Ocean Survey Advisory Panel, and the Panel on International Program of the Interagency Committee on Oceanography (PIPICO). PIPICO remains as an interagency panel under the aegis of the Department of State. The acronym has been carried on and the present title is now the Panel on International Programs and International Cooperation in Ocean Affairs. Its purpose is to coordinate U.S. participation in international programs.

The ICO terminated in 1967 upon creation of the National Council on Marine Resources and Engineering Development (NCMRED) following passage of the Marine Resources and Engineering Development Act of 1966 (MREDA). The Council, sometimes called the Marine Sciences Council (MSC), or Marine Resources Council (MRC) was chaired by the Vice-President of the United States and comprised officials from the several Federal agencies with marine science interests. It came under the Executive Office of the President, and its mission was to provide assistance to the President in the development and coordination of a national oceanographic program and to assure that marine science and technology were used effectively in the interests of national security and the general welfare. Its plan for the U.S. Federal effort was known as the Ten-Year Plan for Ocean Exploration (TYPOE).

The Council created four interagency committees to coordinate policies and programs and to develop recommendations as to issues requiring the Council's attention: Marine Research, Education, and Facilities (CMREF) or (ICMREF); Ocean Exploration and Environmental Services (COEES or ICOEES), later superceded by the Committee on Policy Review; Food From the Sea (CFFS or ICFFS); and Multiple Use of the Coastal Zone (CMUCZ or ICMUCZ). The Secretary of State established a fifth committee, the Committee on International Policy in the Marine Environment (CIPME).

In 1968 ICMUCZ sponsored a Task Group on Identification of Problems, Opportunities, and Needs (IPON) and a Task Group on Interagency Coordination, Federal-State Relationships, and Legal Problems (COSREL). Both groups were short lived.

In 1971 the Council was superseded by the Interagency Committee for Marine Science and Engineering (ICMSE) created by the Federal Council for Science and Technology (FCST). ICMSE comprised officials from 11 departments and agencies involved in marine science activities. The NOAA administrator was appointed the chairman. ICMSE was responsible for ensuring, planning, and coordinating Federal activities in marine sciences and related matters; identifying the need for and

fostering appropriate studies and investigations; and making an annual review of the Federal Ocean Program (FOP) and budget. In 1976 ICMSE was replaced by the Committee on Atmosphere and Oceans (CAO). CAO, a part of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) in the Office of Science and Technology Policy, consists of two subcommittees, one responsible for oceans and the other for the atmosphere. The latter succeeded to the activities of the former Interdepartmental Committee for Atmospheric Sciences (ICAS) established in the FCST in 1959.

Other interagency bodies of interest are the Interagency Arctic Coordinating Committee (IARCC), established in FCST in 1968 to coordinated Federal research in the Arctic; the Committee on Earth Resources Satellite Systems (CERSS) established in 1977; the Interagency Committee on World Weather Programs (ICWWP) established to coordinate U.S. participation in the World Weather Watch (WWW) and the Global Atmospheric Research Program (GARP); the Advisory Committee on the Law of the Sea (ACLOS) established to review the U.S. position at the U.N. Law of the Sea Conference (UNCLOS); and the Interagency Committee on Marine Environmental Prediction (ICMAREP) established to coordinate the basic Marine Environmental Prediction Service (MAREP) involving a composite of interagency activities specified by formal and informal agreements.

362. COUNCILS

The Water Resources Council (WRC), established in 1965 and composed of heads of selected Federal departments with major interests in water resources and associate members from other agencies with peripheral interests in management of water resources, has cognizance over the activities of the several Federal-State river basin commissions. Those commissions that have some marine science related activities, particularly in the estuarine areas, are the Delaware River Basin Commission (DRBC), established in 1961; the Great Lakes Basin Commission (GLBC), established in 1967; the New England River Basin Commission (NERBC); and the Pacific Northwest River Basin Commission (PNWRBC). All are concerned with estuarine research, pollution control measures, conservation of resources, and long-range planning.

363. INTERDEPARTMENTAL BOARDS

The Board on Geographic Names (BGN), originally established in the Department of Interior in 1890 as the United States Geographic Board and renamed the Board on Geographic Names in 1934, was made an interdepartmental agency in 1968. Its primary function is to promote the standardization of geographic names; it serves both military and civilian agencies.

Executive Departments

364. DEPARTMENT OF COMMERCE: DOC

The largest civilian agency with marine science activities, DOC includes NOAA and the Maritime Administration (MARAD). Its National Bureau of Standards (NBS) and National Technical Information Service (NTIS) provide services of value to marine scientists. These four agencies are described further in entries 365 through 379. Its Bureau of the Census (BC) and Bureau of Economic Analyses (BEA) have peripheral interests as together they are compiling estimates of the volume of pollutants emitted into the environment.

Departmental secretaries may establish advisory committees to serve their interests and the interests of the agencies or bureaus they supervise. The Secretaries of Commerce have established the Marine

Fisheries Advisory Committee (MAFAC), which ensures that policies and programs relating to marine fisheries are adequate to meet the needs of commercial and sport fishermen, consumers, and other national interests; the Coastal Zone Management Advisory Committee (CZMAC) whose members are selected on a geographic basis and who possess a broad range of experience and knowledge relating to problems in the management of coastal resources; and the Marine Petroleum and Minerals Advisory Committee (MPMAC), which is especially concerned with the Deep Ocean Mining Environmental Study (DOMES).

365. MARITIME ADMINISTRATION: MARAD

Established in 1950 as a successor to certain functions of the former U.S. Maritime Commission originally established in 1936, MARAD administers programs to help develop, promote, and operate the U.S. Merchant Marine. It operates the U.S. Merchant Marine Academy (USMMA) for potential merchant marine officers and provides training courses in marine specialties for merchant seamen. Its National Maritime Research Center (NMRC), established in 1971, serves as the national center for coordination and dissemination of information on new technologies including providing technical support to MARAD's research programs and testing products and innovations produced by MARAD. NMRC operates a Computer-Aided Operations Research Facility (CAORF) that provides information on the avoidance of collisions, ship handling operations, human factors in vessel handling, and 'what if' situations regarding ship operations.

366. NATIONAL BUREAU OF STANDARDS: NBS

Established in 1901 to bring the United States into compliance with measurement standards used by other nations, NBS has recently assumed broader responsibilities by fostering applied research. Its major responsibilities include materials research, applied technology, experimental technology, computer sciences and technology, and basic standards. It is concerned with water pollution measurements, developing standards for the measurment of pollution, evaluating the accuracy of instruments and methods for measuring concentrations of pollutants in water and sediments, and compiling physical and chemical properties of pollutants.

367. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION: NOAA

Organized in 1970, NOAA assumed the functions of the environmental science programs administered by a number of Federal agencies including the Departments of Commerce, Interior, Transportation, Army, Navy, and the National Science Foundation.

Its wide range of responsibilities include managing the National Weather Service and the National Marine Fisheries Service, developing environmentally sound coastal zone management programs, sponsoring atmospheric and oceanic research, overseeing and operating the nation's environmental satellite system, making extensive geodetic and oceanographic surveys, and developing data management systems.

In cooperation with the Department of the Navy, several of NOAA's agencies participate in the Joint Ice Center (JIC), established to forecast and report on ice formations in the Northern Hemisphere.

Entries 368 through 378 cover the major offices within NOAA.

368. OFFICE OF COASTAL ZONE MANAGEMENT: OCZM

OCZM, also referred to as CZM, was created by the Coastal Zone Management Act (CZMA) of 1972 to direct a comprehensive program to help coastal States reconcile the increasing demands on their coastal zone lands and resources with the national goal of preserving coastal

environments. It is also responsible for administering the marine sanctuaries program established by the Marine Protection, Research, and Sanctuaries Act (MPRSA) of 1972. It developed and is managing the Coastal Energy Impact Program (CEIP) to provide financial assistance to help coastal States and local communities affected by new and expanded coastal energy activities.

In 1978 OCZM was given the responsibilities for NOAA's Office of Ocean Management (OOM), established to review programs and projects.

369. OFFICE OF FISHERIES: OOF

This office consists of the National Marine Fisheries Service (NMFS) created when Bureau of Commercial Fisheries (BCF) of the Fish and Wildlife Service (F&WS) in the Department of the Interior was transferred to the newly created NOAA in 1970. The service supports biological research on economically important fish species, analyzes economic aspects of fisheries operation, develops methods for improving fish catches, and supports studies of game fish behavior and resources. With the U.S. Coast Guard (USCG), it carries out enforcement and surveillance operations in territorial waters and on the high seas within the Fishery Conservation Zone (FCZ) or 200-mile limit as established by the Fisheries Conservation and Management Act of 1976 (FCMA).

NMFS has four regional centers: the Northeast Fisheries Center (NEFC), which includes the former Middle Atlantic Coastal Fisheries Center (MACFC); the Northwest and Alaska Fisheries Center (NWAFC) created in 1976 by a merger of the Northwest Fisheries Center (NWFC) with the Alaska Fisheries Center (AFC); the Southeast Fisheries Center (SEFC), which incorporated the functions of the Atlantic Estuarine Fisheries Center (AEFC), the Gulf Coastal Fisheries Center (GCFC), and the Tropical Atlantic Biological Laboratory (TABL); and the Southwest Fisheries Center (SWFC) formed by a merger of the La Jolla, Calif. and Honolulu, Hawaii, biological laboratories. The Atlantic Environmental Group (AEG) falls within the purview of the NEFC and the Pacific Environmental Group (PEG) within the SEFC. The Southwest Fisheries Center is responsible for the Fisheries Engineering Laboratory (FEL). In 1973 SEFC conducted the Oceanic Gamefish Investigations (OGI), also called SKYLAB. It was also responsible for the development of the Remote Underwater Fishery Assessment System (RUFAS), a towed sled containing equipment to assess fishery resources. Two of the centers include utilization research centers to perform research on fishery products, especially the underused varieties; one in the northeast is identified as NURC, and the other, on the Pacific coast is called PURC.

With the passage of FCMA of 1976, NMFS established Regional Fisheries Management Councils (RFMC) to prepare and implement fishery management plans for the FCZ that will achieve and maintain on a continuous basis the optimum yield from each fishery. Each RFMC includes in its membership the regional director of NMFS, the principal State official responsible for marine fishery management in each region, and designated individuals having knowledge or experience with regard to fish resources in each region. The number of the latter categories varies according to the number of States in the region. The councils are the NEFMC--New England Fishery Management Council; WPFMC--Western Pacific Fishery Management Council; NPFMC--North Pacific Fishery Management Council; PFMC--Pacific Fishery Management Council; MAFMC--Mid Atlantic Fishery Management Council; SAFMC--South Atlantic Fishery Management Council; CFMC--Caribbean Fishery Management Council; and GMFMC--Gulf of Mexico Fishery Management Council.

NMFS and its Centers sponsor many programs. Among these are MARMAP--Marine Resources Monitoring, Assessment, and Prediction, which is jointly sponsored by FAO; OFW--Operation Fish Watch, a program to take monthly surveys of seafood prices in 10 U.S. cities; SAFE--Stock Assessment and Fishery Investigations, a cooperative project of the La Jolla, Calif. Laboratory and the California Department of Fish and Game; CALL--Communications Alert and Liaison System, to gather and document pertinent information when there is a question as to whether fishery products are linked to a public health problem; a Platform of Opportunity (POO) or Ships of Opportunity Program (SOOP), operated in conjunction with the Maritime Admininstration to use volunteer observers to collect data where U.S. fishing fleets operate (the data will then be added to an all-seasons data base of temperatures and salinity at all depths); and PRIME--Processing, Research, Inspection, and Marine Extension--a mobile laboratory for on-site inspection of seafood processing plants.

It operates the Fishery Statistics Data Base (FSDB), a partially automated data base with information and data about commercial fisheries, fishery landings, and fishery management. It administers the Marine Mammal Protection Act (MMPA) of 1972 and the Endangered Species Act (ESA) of 1973 in so far as marine life and their ecosystems are concerned. It developed the Towed Optical Assessment Device (TOAD) for fishery research.

370. OFFICE OF RESEARCH AND DEVELOPMENT: ORD

Three major components constitute ORD: the Environmental Research Laboratories (ERL), the Office of Ocean Engineering (OCE), and the Office of Sea Grant (OSG). They are described separately in entries 371 through 373.

371. ENVIRONMENTAL RESEARCH LABORATORIES: ERL

Antecedents of NOAA's Environmental Research Laboratories are the former Central Radio Propagation Laboratory and certain research functions of the Weather Bureau and the Coastal Geodetic Survey, which formed the Institutes for Environmental Research (IER) in the Environmental Science Services Administration (ESSA). Later known as ESSA's Research Laboratories, with the formation of NOAA in 1970 these activities were renamed the Environmental Research Laboratories.

ERL, through its several laboratories, is a principal research and development arm of NOAA. It is responsible for performing fundamental scientific investigations designed to improve the understanding of the environment. It coordinates NOAA's activities in a program called Rational Use of the Sea Floor (RUSEF), in the Spilled Oil Research Team (SOR) and the Spilled Oil Response Team (SORT). The latter, which includes members from several other NOAA components and from other agencies, is called upon to investigate environmental conditions when oil is spilled in the sea.

ERL is responsible for the Marine Ecosystems Analysis (MESA) program created in 1973 to perform physical, geological, chemical, and biological research to assess the human impact on specific marine environments and to develop the capability to predict environmental consequences of proposed changes. The MESA program is currently being conducted in two areas: the New York Bight (NYB) and Puget Sound. Expanded Water Column Characterization (XWCC) cruised are being made in the NYB.

In 1970 ERL inherited the Marine Minerals Technology Center (MMTC) from the Department of the Interior. MMTC was abolished, but before it ceased to exist it participated in the 1973 New England Offshore Mining Environmental Study (NOMES), a cooperative program with other

components of NOAA and the State of Massachusetts. Currently the MESA Program is managing the Deep Ocean Mining Environmental Study (DOMES). Deep Ocean Mining Operations (DOMO), the first operational test of DOMES, gathering manganese nodules from the sea floor of the Central Pacific, began in 1977.

ERL coordinates the Alaska Outer Continental Shelf Environmental Assessment Program (OCSEAP) which is funded by Department of Interior's Bureau of Land Management (BLM). Terms associated with the Program are the Bering Sea Mammal Experiment (BESMEX) and the Northeast Gulf of Alaska (NEGOA).

Several of ERL's laboratories are involved in marine research. The two major ones are the Atlantic Oceanographic and Meteorological Laboratory (AOML) and the Pacific Marine Environmental Laboratory (PMEL). Antecedents of both go back to the Institutes for Oceanography (IOC) in ESSA's Institute for Environmental Research. IOC was subsequently reorganized into two separate laboratories, the Atlantic Oceanographic Laboratory (AOL) and the Pacific Oceanographic Laboratory (POL), which were in turn renamed.

AOML's mission is to contribute to the basic understanding of the characteristics and processes of the waters of the ocean, the sea floor, and the atmosphere. It operates four laboratories--Physical Oceanography, Ocean Chemistry, Marine Geology and Geophysics, and Sea Air Interaction (SAIL). In 1977 it cooperated with the Rosenstiel School of Marine and Atmospheric Science of the University of Miami (RSMAS) in joint establishment of a Cooperative Institute for Marine and Atmospheric Studies (CIMAS), a focal point for concentrated research on specific problems of oceans and atmosphere by specialists from the parent organizations. It was also the lead U.S. agency in the recently completed international CICAR--Cooperative Investigations of the Caribbean and Adjacent Regions--program, and is the lead U.S. agency in IOCARIBE. It was responsible for STAX, the Sludge Tracking Acoustical Experiment in the New York Bight. Together with PMEL it is involved with NOAA's Equatorial Pacific Ocean Climate Studies (EPOCS), a plan to investigate oceanographic and climatic variability in the Eastern Pacific.

PMEL sponsors interdisciplinary research and surveys in oceanography, marine meteorology, and marine ecosystems. Its programs include OARS--Ocean Atmosphere Response Studies, SCENE--Studies of Coastal and Estuarine Environments, conducted in Alaska waters in 1976; TRANSPAC-MAG, a 1971 study of magnetic anomalies in the Western Pacific; MSS--Modeling and Simulation Studies; MARLAGS--Marine Life and Geochemical Studies, PMEL's major biological and oceanographic focus, conducted primarily for OCSEAP and DOMES; and SOUL--Studies of Ocean Upper Layers, a cooperative program with the Office of Naval Research (ONR) to study mixing processes in the upper layer of the ocean in response to oceanic storms.

It is responsible for NOAA's participation in the Joint Tsunami Research Effort (JTRE), a cooperative program with the University of Hawaii. In 1977 it collaborated with the University of Washington in the establishment of a Joint Institute for the Study of the Atmosphere and the Ocean (JISAO). Mechanisms of climate change and estuarine research are the first areas of research for JISAO. In 1977, together with the University of Hawaii, it established a Joint Institute for Marine and Atmospheric Research (JIMAR) to be a focus for cooperative research in oceanography, geophysics, and atmospheric sciences. Other ERL laboratories and offices of interest to marine researchers include the Great Lakes Environmental Research Laboratory (GLERL) formed in 1974 by combining the staff of the International Field Year for the Great Lakes (IFYGL) Project Office with that of the Limnology and

Computer Divisions of the Lake Survey Center (LSC); the Geophysical Fluid Dynamics Laboratory (GFDL), which supports basic research into the dynamics of geophysical fluids in the atmosphere, hydrosphere, and cryosphere and whose research efforts are facilitated by the Geophysical Fluid Dynamics Program (GFDP), a joint NOAA/Princeton University Research Center (PURE) effort; the National Hurricane and Experimental Meteorology Laboratory (NHEML), which became a full-fledged research affiliate within ERL in 1978 to perform basic research on hurricanes and cumulus connection and the atmospheric environments in which they occur and interact and whose projects includes Stormfury, a program to study the possibilities of modifying hurricanes; the National Severe Storms Laboratory (NSSL) which concentrates on improving the understanding of severe storms; the Wave Propogation Laboratory (WPL) established as a focal point for development and application of new methods for remote sensing of the geophysical environment and which includes a seastate group concerned with the remote measurement of ocean waves and surface currents; and the Weather Modification Office (WMPO), responsible for evaluating social, legal, and economic consequences of Federal weather modification projects, and for overseeing a comprehensive program of basic research on hurricanes, connective clouds, and severe storms.

372. OFFICE OF OCEAN ENGINEERING: OOE

Established in NOAA in 1977 upon recommendations of NACOA, OOE is the overall coordinator of all Federal civilian ocean engineering programs and is responsible for research to develop services related to ocean engineering and undersea operations and to serve as a national focal point for knowledge related to civil ocean engineering. It includes three major activities: the Manned Undersea Science and Technology Office (MUS&T), the NOAA Data Buoy Office (NDBO), and the Ocean Instrumentation Engineering Office (OIEO).

MUS&T was established in NOAA in 1971 to review the U.S. manned undersea activities (MUA) that meet the needs of NOAA. It participates in many projects including FLARE--the Florida Aquanaut Research Expedition in which a small transportable habitat called EDALHAB was deployed for use of divers conducting experiments to support the concept that living coral reef communities can be used as experimental habitats; and SCORE--the Scientific Cooperative Research Expedition in the Bahama Banks in 1975 where saturation diving, deep air excursions, and submersible lockout techniques were used in deep reef studies.

Together with NOAA's Office of Sea Grant, the Department of the Navy, and the State University System of Florida's Institute of Oceanography, MUS&T developed a scuba curriculum called SITS--Scientists in the Sea. It was also responsible for initiating Project DUMAND--Deep Underwater Muon and Neutrino Detection--now a multiagency project. It maintains the National Underwater Laboratory System (NULS) and operates NOAA's manned underwater station (MUS) or manned underwater laboratories (MUL).

NDBO had its antecedents in the National Data Buoy Development Project (NDBDP) established in the U.S. Coast Guard in 1967 following recommendations from various advisory committees dating back to 1959. In 1970 NDBDP was transferred to the newly created NOAA where it was renamed the NOAA Data Buoy Office (NDBO). Originally placed in NOAA's National Oceanic Survey it was transferred to the Office of Ocean Engineering when that Office was established.

NDBO is responsible for the National Data Buoy Program (NDBP) which includes the development and management of data buoys in support of scientific research and of monitoring, forecast, and warning services.

It is located at the Mississippi Test Facility (MTF) in Bay St. Louis, Miss.

In 1967 together with the Office of Naval Research, NDBO sponsored a Mooring Dynamics Experiment (MDE) conducted by the Charles Stark Draper Laboratory at the Navy's Pacific Missile Range Facility (PMRF). It is participating in the development of meteorological drifting buoys to be used in the First Garp Global Experiment (FGGE) in 1979. It was recently selected to investigate heat exchanger fouling aspects of the Ocean Thermal Energy Conversion (OTEC) project in the northern Gulf of Mexico and is developing a buoy, known as OTEC-2, to be deployed at the site. It operates a very large buoy as an Ocean Test Platform (OTP) in the Gulf of Mexico where buoy subsystems and other ocean engineering equipment are evaluated.

It operates an extensive system of moored Environmental Buoys (EB) in the U.S. offshore waters. Among the EB's are EEP's--Engineering Experimental Phases--an early developmental buoy; XERB--an Experimental Environmental Research Buoy; PEB--a Prototype Environmental Buoy; DOMB--a Deep Ocean Moored Buoy; and CSD--a Continental Shelf Discus buoy. Other buoy systems developed by NDBO include ADRAMS Air Droppable Measurement System designed to allow remote tracking of the nearshore ice pack in the Arctic; EGP--Experimental GOES Platform developed to help evaluate the capabilities of ocean platforms to communicate environmental data via the Geostationary Operational Environmental Satellite (GOES); an AEB--Arctic Environmental Buoy, a remote unattended system for data acquisition and telemetry designed especially for harsh surface temperature extremes and installed in support of the Arctic Ice Dynamics Experiment (AIDJEX) conducted by the University of Washington.

The larger environmental buoys are equipped with a Wave Data Analyzer (WDA). Another system mounted on EB's is the Water Quality Indicator System (WQIS) designed to measure water quality at dumpsites.

The Ocean Instrumentation Engineering Office (OIEO) has its antecedents in the National Oceanographic Instrumentation Center (NOIC), a semiautonomous office transferred to NOAA's National Ocean Survey (NOS) in 1970 where it was abolished as a national center. OIEO and several NOS branches assumed its functions. OIEO's responsibilities include developing and implementing advanced programs in standards, calibration, and testing, and it operates an instrumentation information center.

NOIC was instrumental in establishing the Northwest Regional Calibration Center (NRCC), which is operated by the Oceanographic Institute of Washington (State).

373. OFFICE OF SEA GRANT: OSG

Public Law 89-688, approved in 1966, created the Sea Grant (SG) Program whose purpose is "to increase the understanding, assessment, development, utilization, and conservation of the Nation's ocean and coastal resources by providing assistance to promote a strong educational base, responsive research and training activities, and broad dissemination of knowledge and techniques." Sea Grant was originally administered by the National Science Foundation before its transfer to NOAA. Sea Grant makes grants to institutions engaged in comprehensive marine research and education, to advisory service projects, and to individual researchers.

NOAA's National Marine Advisory Service (NMAS), also referred to as MAS, was formed under the leadership of OSG, though it is responsible to all of NOAA. Its fundamental concept is the local Marine Advisory Program (MAP) conceived under OSG to bring information on

marine resources and NOAA's products and services to the attention of those who use the sea, either for commercial or recreational purposes.

An integral part of the NMAS program is the Regional Coastal Information Center (RCIC), a network of up to nine interlocking centers being developed as a cooperative effort by NOAA's Environmental Data and Information Service (EDIS), its Office of Coastal Zone Management (OCZM), and OSG. RCIC's will provide information services to coastal zone management programs, Sea Grant programs, local offices, and individual researchers. The RCIC at the University of Rhode Island, the first established, is called the Northeast Regional Coastal Information Center (NERCIC). Others established to date are the Northwest Coastal Information Center (NCIC) and the Great Lakes Regional Information and Referral Center (GLRIRC).

OSG recently instituted an International Cooperative Assistance Program (ICAP) for marine science training and information exchange with other nations. Individual Sea Grant Universities or colleges may receive funding under the program to develop cooperative programs with the developing nations.

374. OFFICE OF OCEANIC AND ATMOSPHERIC SERVICES: OAS

Components of OAS are the Environmental Data and Information Service (EDIS), the National Environmental Satellite Service (NESS), the National Ocean Survey (NOS), and the National Weather Service (NWS). Descriptions of these service components are covered in entries 375 through 378.

375. ENVIRONMENTAL DATA AND INFORMATION SERVICE: EDIS

The Environmental Data Service (EDS) was created in the former Environmental Science Services Administration (ESSA) in 1965. It was transferred to the newly created NOAA in 1970. Proposals were made to change its name to National Environmental Data and Information Service (NEDIS) to reflect its role in information as well as data services; however, in 1978 its name was changed but the "National" was eliminated.

Through its national network of specialized environmental service centers, EDIS acquires, processes, and disseminates global environmental data and information, provides professional data management support to large-scale data gathering programs, and assesses the probable effects of environmental fluctuations on world food supplies and national energy programs. It makes its products available to users in Government and the private sector.

Its Center for Environmental Assessment Service (CEAS) was established in 1978 by merger of the Center for Experiment Design and Data Analysis (CEDDA) and the Center for Climatic and Environmental Analysis (CCEA). Its functions include providing data management, interpretation, and analysis to meet national needs for atmospheric, climatic, and marine environmental assessment. It is and has been involved in data management for major research programs such as BOMEX--the Barbados Oceanographic and Meteorological Experiment and GATE--the Global Atmospheric Research Program's Atlantic Tropical Experiment. It manages SADEMS--the Salt Dome Experimental Monitoring System, a part of the Brine Disposal Program (BDP) in the Gulf of Mexico where brine disposal is necessitated by mining of salt domes for oil storage facilities. SADEMS, a system installed on an oil platform, reports wind data hourly to a GOES satellite. A Deepwater Ports Project Office (DPPO), once in CEDDA, has now been abolished. Personnel are also members of the Spilled Oil Response Team

(SORT). It is also responsible for the development of a global climate monitoring system, for research on the environmental impact on crops and fish, for establishing a climate warning system, and for serving as a focal point for climatic impact information.

Its Environmental Science and Information Center (ESIC) serves as NOAA's scientific and technical publisher, information banker, and librarian. It developed and operates the computerized Oceanic and Atmospheric Scientific Information System (OASIS), which provides rapid access to a large number of bibliographic data bases dealing with atmospheric, oceanic, and Earth sciences and marine resources.

Its National Climatic Center (NCC), originally established in the Weather Bureau (WB) as the National Weather Records Center (NWRC), archives all weather data from U.S. agencies, including NOAA's National Weather Service (NWS) and its predecessor, the Weather Bureau, the U.S. Air Force and Navy weather services, the Federal Aviation Administration, the U.S. Coast Guard, and many cooperative observers. The NCC data base includes observations on marine weather and surface conditions reported by cooperating ships, U.S. and foreign. It is also responsible for the Satellite Data Services Division, which operates the environmental satellite data base comprising data imagery and related data from NOAA's Earth-orbiting satellites and imagery from NASA's experimental and operational spacecraft and satellites. NCC produces many publications, among them the series of Summary of Synoptic Meteorological Observations (SSMO) covering the coasts of the United States and its territories. It is also responsible for the WMO-sponsored Marine Climatological Summaries for the eastern Pacific and western North Atlantic.

Its National Geophysical and Solar-Terrestrial Data Center (NGSDC), formed by a merger of the Aeronomy and Space Data Center (ASDC) with the National Geophysical Data Center (NGDC), acquires, processes, archives, evaluates, and disseminates solid Earth and marine geophysical data and ionospheric, solar, and other space environmental data. It is responsible for the World Data Center-A for Solid Earth Geophysics and for Solar-Terrestrial Physics. It operates the Earthquake Data File (EDF).

Its National Oceanographic Data Center (NODC), established in 1961 as an interagency facility administered by the U.S. Naval Oceanographic Office and advised, until its absorption by NOAA in 1971, by a board composed of members from Government agencies involved in marine research activities, acquires, processes, archives, and disseminates oceanographic data, except for marine geological and geophysical data.

NODC developed the National Data Inventory (NAMDI) to identify data taken by U.S. oceanographers. NAMDI was superseded by the international reporting form ROSCOP, and the NODC maintains a file of ROSCOP's submitted by oceanographers worldwide. NODC operates EDIS's Environmental Data Index (ENDEX), a computerized data base whose objective is to provide users with rapid references to available data files in environmental sciences, including marine and coastal resources. ENDEX includes the Environmental Data Base Directory (EDBD), an inventory of environmental data bases located at Federal, State and local agencies, educational and research institutions, and private organizations in Canada and the United States. ENDEX also includes the NODC Index for Instrument Measured Subsurface Current Observations (NIMSCO) and the Bottom Photograph Camera Station File (PHOTO) with indexes to 7,700 camera sations throughout the world's oceans represented by one or more bottom photographs available from an agency in the United States.

NODC was also responsible for the Biology Information Retrieval System (BIRS), a part of NOAA's Oceanic and Atmospheric Scientific Information System (OASIS). BIRS, which includes over 30,000 articles on marine biology indexed in depth, was discontinued with the adoption of the Aquatic Sciences and Fisheries Information System (ASFIS) sponsored by the United Nations.

376. NATIONAL ENVIRONMENTAL SATELLITE SERVICE: NESS

Established in the Environmental Science Services Administration as the National Environmental Satellite Center (NESC), it was renamed in 1970. It operates the Nation's environmental satellite system and ensures that the masses of data acquired are disseminated to those who need it. It is responsible for developing new techniques for acquiring environmental satellite data and applying these data to improved programs of environmental monitoring, prediction, and warning, and for the Spacecraft Oceanography Project (SPOC) originally the responsibility of the U.S. Navy until its transfer to NESS in 1972. Among the systems operated by NESS is the series of Geostationary Operational Environmental Satellites (GOES) that are in Earth-synchronous orbit. NESS developed and is responsible for the operation of SEASAT, a satellite designed to measure oceanic phenomena. Launched in 1978, SEASAT developed problems, and communications with it failed shortly after it was in orbit. SEASAT-A Scatterometer System (SASS), an active microwave instrument that illuminates the sea surface to provide estimates of surface wind magnitude and direction, was developed. A project to consider possible application of SEASAT data to the administration of the 200 mile fishery zone, the work of the International Ice Patrol, studies of fish production in the coastal zone, etc., was conducted by Econ, Inc. for NESS is known as Economic Verification Experiments (EVE). NESS cooperates closely with the National Aeronautics and Space Administration, and together they sponsored the Coastal Zone Color Scanner Study (CZCS) held in 1977-78 using data taken by ships and satellites to relate color of seawater to both physical and biological properties. NESS also developed the Global Ocean Sea-Surface Temperature Computation Program (GOSSTCOMP).

377. NATIONAL OCEAN SURVEY: NOS

Antecedents of NOS date back to 1807 when a survey of the coast was authorized by Congress and officially established as an agency in 1816. In 1878 it was renamed the Coast and Geodetic Survey (C&GS or USC&GS), a title that was changed to National Ocean Survey in 1970 when the C&GS, a part of ESSA, was absorbed by the newly created NOAA. Its prime mission is the compilation and provision of charts for mariners and navigators. It conducts surveys and performs investigations and analyses to accomplish this mission. Most of its work is in the U.S. coastal regions, territories and land possessions, and the Great Lakes. It also publishes the Coast and Great Lakes Pilot series, tidal current charts, and tide and tidal current predictions.

The National Geodetic Survey (NGS), responsible for establishing and maintaining national geodetic networks, the precise positional reference for all local, regional, and national surveys and maps, is a part of NOS. It maintains a National Geodetic Information Center (NGIC) and a Geodetic Research and Development Laboratory (GRDL).

NOS field operations are conducted through two centers, the Atlantic Marine Center (AMC) and the Pacific Marine Center (PMC).

NOS conducts many services and projects. Among these are two to which acronyms have been applied: SCOPE--the Southern Coastal Plains

Expedition, an environmental survey in 1972-74 off the southeastern coast from Cape Hatteras to Cape Kennedy, and SEAMAP--Systematic Exploration and Mapping Program, conducted in the Pacific to determine and describe physical properties related to the crust, mantle, and core of the Earth, with particular emphasis on the deep ocean basins. Two systems developed for or by NOS are known by acronyms: SWORD-Shallow Water Oceanographic Research Data, a system for continuous recording of temperature, salinity, and currents designed for use on lightships; and TICUS--Tidal Current Survey System, a telemetering data gathering system.

The U.S. Lake Survey (USLS) of the Corps of Engineers was transferred to the newly created NOAA in 1970 where it was placed in the National Ocean Survey and renamed the Lake Survey Center (LSC). Subsequently, many of the research activities of LSC were transferred to other components, principally the Great Lakes Environmental Research Laboratory (GLERL), leaving the LSC primarily responsible for surveying and charting the Lakes.

NOS operates a Current Meter Data Base (CMD), an information gathering mechanism for preparing and updating the annual publications, Tidal Current Charts and Tidal Current Tables, which also document estuarial circulation so that the data are available in the event of environmental emergencies such as oil spills; a tide data base (TIDES) containing reports of hourly tide heights from a national network of about 130 tide stations and other stations included as a part of the Marine Boundary Surveys and used in the publication Tide Tables; and a Tidal Constants (TC) data base, which, using CDM and TIDES, predicts harmonic constants of tides and currents for use in the preparation of the annual publications Tide tables and Tidal Current Tables.

Other acronyms associated with NOS are BSSS--Bathymetric Swath Survey System; CDMS--Current/Depth Measurement Subsystem; CMICE--Current Meter Intercomparison Experiment; and NOSTS--National Ocean Survey Tide Station; ODESSA--Oceanographic Data for the Environmental Science Services Administration, a telemetering data gathering and processing system developed by the USC&GS in the 1960's and COSMOS--Coast Survey Marine Observation System--a large stable platform buoy developed in 1968.

378. NATIONAL WEATHER SERVICE: NWS

Originally established in the Signal Corps of the U.S. Army in 1871 as the Weather Bureau (WB) and later assigned variously to the Departments of Agriculture or Commerce until its transfer to the Environmental Science Services Administration in 1965, it was renamed the National Weather Service (NWS) in 1970 when ESSA was absorbed by the newly created NOAA. NWS provides comprehensive weather forecasting, issues warnings of impending severe events, and provides special services to weather-sensitive activities. It operates Weather Service Forecast Offices (WSFO's) in each of the 50 States to provide forecasts for coastal waters as well as Land areas; a network of Port Meteorological Officers (PMO) to provide meteorological information to navigators; and National Hurricane (NHC) and National Severe Storm Forecast Centers (NSSFC).

Its WFSO in Seattle, Wash. has developed a prototype marine service unit called the Seattle Ocean Services Unit (SOSU), which is developing products for use of marine navigators. One of its experimental products is a series of Ocean Thermal Boundary Analysis (OTBA) charts for the nort west coast from southern Oregon to Vancouver Island and extending about 400 miles seaward. It developed State Emergency Communications Committees (SECC) and the Emergency Hurricane Information Center (EHIC). The Seismic Sea Wave Warning System (SSWWS), formerly

the responsibility of the Coast and Geodetic Survey, was first transferred to NOAA's Environmental Research Laboratories in 1971 and then to NWS in 1973. In conjunction with the system, NWS operates the Pacific Tsunami Warning Center (PTWC) and the Alaska Tsunami Warning System (ATWS) and Center (ATWC).

Its programs include the Shipboard Environmental Data Acquisition System (SEAS), an automated meteorological/oceanographic observation system whereby data observations taken by oil tankers, merchant ships, offshore supply vessels, and some naval vessels are transmitted via the GOES to NWS where they are correlated with other environmental data for improved forecasts and warning services; Severe Environmental Storms and Mesoscale Project (SESAME); Atmospheric Forces for the Mid-Atlantic Bight (AFMAB), a program to develop a data base system to test oceanic models for the Mid-Atlantic Bight; and the Automation of Field Operations and Services (AFOS), a program to use modern devices such as on-site computers and display devices to provide maximum assistance to forecasters, hydrologists, weather-service specialists, and observers.

It operates the National Meteorological Center (NMC) which collects, processes, and distributes worldwide weather data on a continuous time schedule describing the current and predicted state of the atmosphere from the surface to about 100,000 feet and conducts research with emphasis on numerical weather prediction. NMC is a part of the World Weather Program of the World Meteorological Organization and is the Specialized Oceanographic Center (SOC) to provide services to users of IGOSS/POLYMODE data.

379. NATIONAL TECHNICAL INFORMATION SERVICE: NTIS

NTIS is the central source for the public sale of Government-sponsored research, development, and engineering reports and other analyses prepared by Federal agencies and their contractors or grantees. Services of NTIS are varied and include retrospective searches of its computerized bibliographic data bases, current-awareness announcements, standing orders for microfiche services, software and data files on magnetic tape, special bibliographies, and many others. In addition to processing reports from civilian agencies of the Government, NTIS receives nonclassified reports and related bibliographic data from the Defense Documentation Center (DDC), which are then made known and available to the public.

380. DEPARTMENT OF DEFENSE: DOD

Established in 1949, DOD includes the Departments of the Army and Navy, both of which are involved in marine science activities. DOD also has other activities of interest. Among these is the Defense Advance Research Projects Agency (DARPA) established in 1958 as the Advance Research Projects Agency (ARPA) under the Director of Defense Research and Engineering and redesignated a separate agency in 1972. DARPA initiates, sponsors, and funds research and development (R&D) programs with military potential until the feasibility of concepts is demonstrated, at which time it transfers responsibility to one of the military services. Ocean-related research projects initiated by DARPA include the design of stable floating platforms, surface effect vessels, undersea power systems, underwater acoustics, and others.

The Defense Documentation Center (DDC) is the military counterpart of NTIS. DDC receives all documents producted by Defense agencies or by contractors receiving defense funding. Its system of storage and retrieval is compatible with NTIS, and all unclassified holdings are made available to the public through NTIS.

The Defense Mapping Agency (DMA) was organized in 1972 when the several mapping activities in DOD were consolidated into one office. Its Hydrographic Center (DMA/HC) is responsible for the preparation and dissemination of nautical charts and related publications, including Pilot Charts and Notices to Mariners, for areas outside territorial waters, formerly the responsibility of the Naval Oceanographic Office. Its Topographic Center (DMA/TC) assumed the responsibilities for mapping formerly assigned to the Army Map Service (AMS), and the Aerospace Center (DMA/AC) assumed the responsibilities of the former Aeronautical Chart and Information Center (ACIC) of the Department of the Air Force. DMA also includes the DOD Bathymetry Library.

381. DEPARTMENT OF THE ARMY: DOA

Most of the marine-related activities of DOA are handled by the Corps of Engineers (COE), sometimes referred to as the Army Corps of Engineers (ACE). Responsibilities of COE include environmental research and development programs in support of its military and civil works programs. Specific activities include river and harbor improvement, coastal engineering, and hydraulics.

It is responsible for the Inner Continental Shelf Sediments and Structure Program (ICONS), a continuing program covering U.S. coastal areas including the Great Lakes. It maintains the Selected Legally Protected Animals (SLPA) file, a central repository of information on the legal status of endangered wildlife species as identified by Federal and State legislation and the Sensitive Wildlife Information System (SWIS) containing species information on endangered wildlife.

Currently COE is responsible for the National Waterways Study (NWS) authorized by the Water Resources Development Act of 1976. Coastal and other navigable waters are being described and assessed, and recommendations regarding their use and maintenance will be made at the end of the study in 1980. Most of these studies and programs are conducted in the Corp's district offices. Its Wilmington District devised the Coastal Research Amphibious Buggy (CRAB), a mechanical surveying vehicle for taking measurements in the surf zone.

Separate administrative organizations in the Corps are the Army Engineers Waterways Experiment Station (AEWES or WES), the Coastal Engineering Research Center (CERC), the Cold Regions Research and Engineering Laboratory (CRREL), and the institute for Water Resources (IWR).

AEWES supports research for the development of harbors, evaluation of tidal hydraulics, and study of estuarine pollution. It manages the Aquatic Plant Control Research Program (APCRP) to rid navigable waterways of certain aquatic plants; the Dredged Material Research Program (DMRP), which was completed in March 1978 and superseded by the Dredging Operations Technical Support (DOTS); the Hydraulic Engineering Information Analysis Center (HEIAC), which includes data on coastal and estuarine waters; and a Hydraulic Engineering Center (HEC), which is responsible for gathering and evaluating data necessary for developing water programs and projects.

CERC was originally established in the Corps of Engineers in 1930 as the Beach Erosion Board (BEB). BEB was primarily an advisory board on coastal erosion, and in 1936 it was abolished and its functions were transferred to the newly created Coastal Engineering Research Center whose mission was expanded to emphasize research on coastal engineering. CERC's chief responsibilities include studies of shore processes and the environmental impact of coastal development. It operated the Coastal Engineering Information Analysis Center (CEIAC) responsible for collecting, analyzing, and disseminating information on coastal engineering and technology. It developed the

Towed Oceanographic Data Acquisition System (TODAS) to collect wave and current data in the nearshore area.

CRREL performs some marine research, especially in relation to sea ice and engineering activities in the polar regions. It operates the Cold Regions Science and Technology Information Center (CRSTIAC), which collects, evaluates, and disseminates technical information and data on science and technology in the polar regions.

IWR sponsors research relevant to comprehensive planning and compiles assessments of impacts of water projects. It is involved in evaluating the impact of deepwater ports (DWP).

382. DEPARTMENT OF THE NAVY: DON

The Department, whose secretary is referred to as SECNAV, includes many units, offices, or commands involved in marine science activities. While its functions are primarily for defense purposes, results of its unclassified research are available to the civilian community and it has been a leader in oceanographic research. In the 1950's it prepared a study of oceanographic research activities and potential aspects of such research that was identified as Ten Years of Oceanography, 1960-70 (TENOC).

It operates the Navy Automated Research and Development Information System (NARDIS) and maintains three focal points for making its information available to the public. Known as Naval Research and Development Information Centers, they are referred to as NARDIC/HQRS, NARDIC/EAST, and NARDIC/WEST. It also sponsors the Navy Industry Cooperative Research and Development Program (NICRAD).

The Navy sponsors the Atlantic Test and Evaluation Center (AUTEC) established in the Tongue of the Ocean (TOTO) where continuous research is conducted by various naval components in physical oceanography, underwater acoustic measurements, testing of equipment, etc. It also sponsors the Santa Cruz Acoustic Range Facility (SCARF), the Inner-Seamount Acoustic Range (ISAR), the Pacific Missile Test Center (PMTC or PMC).

Despcriptions of those naval commands most involved in marine research activities follow in entries 383 through 398.

383. CIVIL ENGINEERING LABORATORY: CEL

Established in 1948 as the Naval Civil Engineering Laboratory (NCEL) and recently renamed the Civil Engineering Laboratory, it is a detachment of the Naval Construction Battalion Center and is responsible for naval construction at advanced bases, shore stations, and in amphibious and underwater operations. It is concerned with data regarding marine environment in these areas. It developed the Naval Experimental Manned Observatory (NEMO), a two-man capsule capable of descending to a depth of 600 feet.

384. ENVIRONMENTAL PREDICTION RESEARCH FACILITY: EPRF

EPRF, also called ENVPREDRSCHFAC, a part of the Naval Air Systems Command, performs research on local and regional environmental analysis and prediction techniques and planning, modeling, and evaluation services. It is especially concerned with meteorological phenomena, marine meteorology, storms, hurricanes, typhoons, and cyclones.

385. MILITARY SEALIFT COMMAND: MSC

Formerly the Military Sea Transportation Service (MSTS), MSC supports the Navy by providing transportation services in direct support of fleet units and in support of the Navy's ocean research program.

386. NAVAL AIR DEVELOPMENT CENTER: NADC

NADC is the Navy's principal activity for research, development, test, and evaluation of naval aircraft systems. Ocean surveillance is an important function of the Center. Its efforts concentrate on measurements of ambient noise intensity, directionality, and propagation loss under variable environments.

387. NAVAL COASTAL SYSTEMS LABORATORY: NCSL

Formerly the Navy Mine Defense Laboratory (NMDL), NCSL specializes in shallow-water oceanography, waves, and estuaries, and their protection.

388. NAVAL ELECTRONIC SYSTEMS COMMAND: NESC

NESC maintains an acoustic data file and a file of marine environmental data.

389. NAVAL ENVIRONMENTAL SUPPORT OFFICE: NESO

NESO is the overall program coordinator for the Naval Environmental Protection Support Service (NEPSS), the central environmental information center for the Department. NEPSS maintains the Navy Environmental Protection Data Base (NEPDB), established in 1973 to support all levels of Navy commands with environmental quality information. A newsletter Clean Slate provides up-to-date information about the Program.

390. NAVAL OCEAN SYSTEMS CENTER: NOSC

NOSC is the principal research, development, technology, and engineering center in the Department of the Navy for undersea surveillance, ocean technology, and advanced undersea weapons system. It was formed in 1977 by a merger of the Naval Undersea Center (NUC) and the Naval Electronics Laboratory Center (NEL or NELC). NUC was established as a major command in 1967 and succeeded to the functions of the former Naval Undersea Warfare Center (NUWC). NUWC had been formed earlier in the 1960's by a merger of the Naval Undersea Research and Development Center (NURDC) with that part of the Naval Ordnance Test Station (NOTS) at Pasadena, Calif. NUC was responsible for the development of the Remote Unmanned Work System (RUWS), an underwater vehicle for use in deep waters.

NEL or NELC was formerly known as the Naval Command Control and Communications Laboratory until its name was shortened to the Naval Electronics Laboratory Center.

NOSC's Arctic Submarine Laboratory (ASL) was responsible for the Marginal Sea Ice Zone Pacific (MIZPAC) program of studies of acoustic and related oceanographic peculiarities of the marginal sea ice zone in the Pacific Arctic. The Applied Physics Laboratory of the University of Washington (UW/APL) carried out the program in 1971-74. NOSC sponsors a Marine Environmental Management Office (MEMO) that makes biological surveys in important Navy harbors, particularly those in the Northeast Pacific area. It is responsible for Mobile Sonar Technology (MOST) and sponsors a MOST Technical Document Information System (MOST/TDIS). It also is responsible for the Navy Ocean Experimental Acoustic Data Bank (NAVDAB).

391. NAVAL OCEANOGRAPHY COMMAND: OCEANAV

Established in 1978 with the disestablishment of the Office of the Oceanographer of the Navy, also referred to as OCEANAV, the newly established command is responsible for oceanographic and meteorological activities of the Department of the Navy and includes the Naval Oceanographic Office (NAVOCEANO); the Fleet Numerical Oceanographic

Center (FNOC) at Monterey, Calif., formerly called the Fleet Numerical Weather Central (FNWC or NFNWC) and before that the Fleet Numerical Weather Facility (FNWF), the several fleet weather centrals (FWC), and the Fleet Weather Facility (FWF) at Suitland, Md.; the Naval Weather Service Command (NWSC) and the Naval Weather Research Facility (WEARESFAC). The Fleet Numerical Weather Central provides full service, worldwide, real-time data pertaining to weather and related conditions for the use of the fleet. It has assembled a wide variety of ocean data including marine weather observations, bathythermograph data, oceanographic station data, and satellite-derived data sets all of which it uses in its forecast analyses.

One of its programs to acquire data is the Cooperative Observation Program (COOP) whereby ships of other organizations are provided Expendable Bathythermograph (XBT) probes and related equipment for using the probes and communicating the data free of charge. The Naval Weather Service Command is responsible for the compilation of the series of Marine Climatic Atlases of the World covering each of the oceans.

392. NAVAL OCEANOGRAPHIC OFFICE: NAVOCEANO

Antecedents of NAVOCEANO, also referred to as NOO or USNOO, date back to the 1830's with the establishment of the Depot of Charts and Instruments whose functions were assumed by the Hydrographic Office (HO) or (HYDRO) upon its establishment in 1866. While primarily responsible for providing navigational aids to naval vessels and aircraft, HO, during and after World War II, became increasingly involved in oceanographic sciences and was resignated the Naval Oceanographic Office in 1962. In 1972, in order to streamline mapping activities in the Department of Defense, responsibilities for preparation of maps, charts, and other publications relating to navigation were removed from NAVOCEANO and placed in the newly created Defense Mapping Agency, leaving marine research the sole responsibility of NAVOCEANO.

NAVOCEANO's oceanographic activities are carried on primarily as required by the U.S. Navy, and many are related to the Anti-Submarine Warfare Program System (ASWEPS) of data collection, processing, and analyses. NAVOCEANO supports the Integrated Carrier ASW Prediction System (ICAPS) data files. Other programs include the Global Geological and Geophysical Ocean Floor Analysis and Research (GOFAR), conducted in 1958; the Harbor Survey Assistance Program (HARSAP) to help Latin American countries develop their capabilities for surveying and publishing port, harbor, and coastal charts; Ocean Acre Project (OCAC), a cooperative program undertaken with the Naval Underwater Systems Center, (NUSC), the Smithsonian Institution (SI), and the University of Rhode Island (URI), to make detailed acoustic, biological, and ecological studies of a 60-mile-square area near Bermuda; Fleet Observations of Oceanographic Data (FLOOD); Airborne Remote Sensing Oceanographic Project (ARSOP); Deep Freeze, a program of research in the Antarctic begun in 1956 and supported by the National Science Foundation (NSF); and Pacific Acoustic Research Kaneohe-Alaska (PARKA) conducted in 1968-69.

Vessels operated by NAVOCEANO include Auxiliary General Oceanographic Research (AGOR), Auxiliary Survey Vessels (ASV), and Auxiliary General Survey (AGS). It also developed the Shipboard Oceanographic Survey System (SOSS) and, together with the Fleet Numerical Weather Center, the Synoptic Oceanographic Data Acquisition System (SODAS) also referred to a ASODAS with the 'A' referring to Augmented.

393. NAVAL ORDNANCE LABORATORY: NOL

NOL is responsible for research, design, development, testing, and technical evaluation of complete ordnance systems, assemblies,

components, and material pertaining to existing and proposed weapons, principally missiles and underwater ordnance. It investigates bottom-water pressure fluctuations in minable waters, optical properties of the ocean, shallow-water sound propagation, acoustic output of explosive charges, and acoustic area techniques. In 1968-72 it conducted a Deep Ocean Optical Measurement (DOOM) project in the North Atlantic, Caribbean, and Mediterranean.

394. NAVAL POSTGRADUATE SCHOOL: NPS

NPS or NPGS is at Monterey, Calif. and specializes in education pertaining to needs of the Department of the Navy, especially in oceanography.

395. NAVAL SEA SYSTEMS COMMAND: NSSC

NSSC is responsible for much of the deep ocean research and engineering studies made by the Navy. Its projects include Deep Submergence Systems Project (DSSP) and Acoustic Performance Prediction (APP). It includes an Environmental Diving Unit (EDU) and sponsors the Diving Information Center (DIC).

396. NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER: NSRDC

Also known as the David W. Taylor Naval Research and Development Center, NSRDC is concerned with the development of naval ship and aviation systems. It gathers data on environmental conditions that affect ship construction and is concerned with pollution abatement aboard ships. It is responsible for the David Taylor Model Basin (DTMB).

397. NAVAL UNDERWATER SYSTEMS CENTER: NUSC

NUSC is the principal center in the Navy for research in underwater weapons and undersea warfare. It was formed in 1970 by a merger of the Naval Underwater Sound Laboratory (NUSL or USNUSL) and the Navy Underwater Weapons Research and Engineering Station (NUWRES). Its studies include physical, biological, and geological oceanography, internal waves as they relate to acoustic system design, air-sea interface, ocean turbulence, variability of shallow water as a weapons environment, ambient noise in the Arctic, and oceanography of underwater test ranges. In 1970 it initiated a Moored Acoustic Buoy System (MABS), a remote subsurface moored self-recording data acquisition system. It supports the Sonar In-Situ Mode Assessment System (SIMAS). In cooperation with the Lamont Doherty Geological Observatory (LDGO), it sponsored the Major Investigation for Low-Frequency Ocean Bottom Loss Experiments (MAINLOBE). It is responsible for the Block Island-Fisher Island Range (BIFI) and makes oceanographic surveys of the area.

398. OFFICE OF NAVAL RESEARCH: ONR

ONR Plans and coordinates research programs of naval relevance throughout the Department of the Navy and executes contracts for doing research at educational and other nonprofit institutions. Its field activities include the Naval Research Laboratory (NRL); Naval Biosciences Laboratory (NBL); Naval Arctic Research Laboratory (NARL); and Naval Ocean Research and Development Activity (NORDA).

NRL was responsible for the Light Behind the Camera (LIBEC) system, which permits photographs of the deep bottom to be taken at greater ranges than before; LIBEC was used during Project FAMOUS to photograph the Mid-Atlantic Ridge. It developed the Over-The-Horizon (OTH) radar for remote observations of sea state at long range and the Synthetic Aperature Radar (SAR) used to detect and map ocean current boundaries. In cooperation with NOAA and the Institute for Telecommunications

Service (ITS), it is sponsoring the program SEA ECHO to monitor distant sea conditions in the North Pacific using OTH; the Gulf of Alaska is the first SEA ECHO study area.

NARL, sometimes called ARL, is owned by ONR and managed by the University of Alaska (UAL). Its projects include the Arctic Research in Environmental Acoustics (AREA) program. It is responsible for the Arctic Research Laboratory Ice Station (ARLIS), an ice island used as a drifting platform to study ice drift and deformation processes.

NORDA's programs include the Synthetic Bathymetric Profiling System (SYNBAPS) and the Long Range Acoustic Propagation Project (LRAPP).

399. DEPARTMENT OF ENERGY: DOE

Established in 1977, DOE succeeded to the activities of the former Federal Engergy Administration (FEA), the Federal Power Commission (FPC), and the Energy Research and Development Administration (ERDA). ERDA, created in 1975 when the Atomic Energy Commission (AEC) was disbanded, succeeded to AEC's research and development activities.

Its responsibilities include the development of alternate energy sources such as Ocean Thermal Energy Conversion (OTEC) and Wind Energy Conversion System (WECS).

It is concerned with environmental safety of energy-producing facilities in the coastal zone and offshore sites and reviews Environmental Impact Statements (EIS) relating to the proposed sites. It supports research and development activities on energy-related pollutants, and its predecessor, the AEC, designed the Deep Water Isotopic Current Analyzer (DWICA) to use radioactivity to analyze currents.

DOE sponsors the National Energy Information Center (NEIC), the National Environmental Research Parks (NERP) (the Savannah River NERP assesses environmental impacts of nuclear fuel processing at DOE installations); the National Biomonitoring Inventory Program (NBIP), a collection of data files containing biological monitoring information; the Energy Research and Development Inventory (ERDI), a data base with descriptions of current energy research and development programs; and the Mid-Pacific Marine Laboratory (MPML), formerly the Eniwetok Marine Biological Laboratory (EMBL) established by AEC in 1954.

400. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE: HEW

Two of the agencies in HEW have some interests for the marine scientist; one is the Food and Drug Administration (FDA), which administers the National Shellfish Sanitation Program (NSSP) established in 1925 as a voluntary cooperative program of Federal, State, and industry representatives whose purpose is the prevention of disease from eating unsafe shellfish. The Public Health Service (PHS) is concerned with the overall health aspects of river, estuarine, and coastal projects, sanitation in recreation areas, such as beaches, and in shellfish-growing areas.

401. DEPARTMENT OF THE INTERIOR: DOI

The Nation's principal conservation agency, DOI is responsible for most of its nationally owned public lands and its natural resources. This includes fostering the wisest use of land and water resources, protecting fish and wildlife, preserving environmental and cultural values of public lands, and providing for outdoor recreation. It also assesses energy and mineral resources to assure that their development is in the best interest of all people.

Included among the departmental offices is an Ocean Mining Administration, established in 1975 to be responsible for developing policy concerning the promotion and continuation of domestic ocean-

mining capabilities in deep seabed areas. In addition, it is responsible for jurisdictional issues in international negotations relating to the resources of the continental shelf (CONSHELF); implementation of a domestic ocean mining program; supervision of assessments of the economics, technology, and resources of ocean minerals; supervision of environmental studies on ocean mineral resources; and liaison with other Federal agencies concerned with ocean mineral resources development and regulatory aspects of ocean mining.

The Secretary has appointed several advisory boards of interest including the National Petroleum Council (NPC) with oil industry representatives who advise on all matters pertaining to oil and gas and who are especially concerned with resources on the continental shelves; and the Outer Continental Shelf Environmental Studies Advisory Commission (OCSEAC).

Agencies in the Department having interests in the marine environment are described in entries 402 through 409.

402. BUREAU OF LAND MANAGEMENT: BLM

Established in 1946 by the consolidation of the General Land Office and the Grazing Service, BLM is responsible for the total management of public lands. In recent years it has supported extensive research on the social, economic, and environmental aspects of outer continental shelf development in areas off the Atlantic Coast, in the Gulf of Mexico, the coast of southern California, and more particularly the coasts of Alaska where it is funding the Outer Continental Shelf Environmental Assessment Program (OCSEAP).

403. BUREAU OF MINES: BOM

Established in 1910, BOM is primarily a research and fact-finding agency and the lead Federal agency in the area of mineral exploration, extraction, processing, utilization, and recycling. It is involved in mining in the marine environment.

404. BUREAU OF RECLAMATION: BOR

Established in 1902, BOR is responsible for the development of water and related land resources in the 17 western States. Most of its activities are nonmarine; however, it sponsored a study of the feasibility of the California Undersea Aqueduct (CUA) to supply water to Southern California. The U.S. Naval Undersea Center participated in the study, known as the California Undersea Aqueduct Reconnaissance--Oceanography (CUARO).

405. HERITAGE CONSERVATION AND RECREATION SERVICE: HCRC

Established in 1963 as the Bureau of Outdoor Recreation (BOR), its name was changed in 1978 to the present title. Its responsibilities include the development of a nationwide outdoor recreation plan, and it provides technical assistance to the States and initiates research. In recent years it has become increasingly aware of the coastal zone as a recreational area.

406. NATIONAL PARK SERVICE: NPS

Established in 1916, NPS conducts and supports marine-related social science research that can be applied to management of the National Park system and to the identification and preservation of the Nation's archeological and historical heritage. It is responsible for the several areas identified as national seashores and is concerned with the effect of development on the outer continental shelf. To this end, it has developed a program entitled Cultural Resources Protection on the Outer Continental Shelf (CRPOCS).

407. OFFICE OF WATER RESEARCH AND TECHNOLOGY: OWRT

OWRT was established in 1974 by a merger of the former office of Saline Water (OSW) and the Office of Water Resources Research (OWRR). It performs water resources research and development activities; administers the university Water Resources Research Institutes (WRRI); and operates the Wrightsville Beach Test Facility (WBTF), a world center of research on saline water conversion and engineering.

408. UNITED STATES FISH AND WILDLIFE SERVICE: USF&WS

Antecedents of USF&WS date back to the establishment of a Fish Commission in 1871. First established as an independent agency, it was later transferred to the Department of Commerce. A second predecessor agency, the Bureau of Biological Survey, had been established in the Department of Agriculture. In 1939 the two bureaus were placed in the Department of Interior, where they merged into one agency renamed the Fish and Wildlife Service (F&WS); in 1956 it was renamed the Fish and Wildlife Service, and two Bureaus, the Bureaus of Commercial Fisheries (BCF) and Sport Fisheries and Wildlife (BSFW) were established within the Service. In 1970, BCF was transferred to the newly created NOAA in 1974, BSFW was renamed the Fish and Wildlife Service.

It is responsible for wild birds, mammals (except certain commercially important mammals), inland sport fisheries, and selected fishery research activities. It sponsors the Fish and Wildlife Reference Service (FWRS), a bibliographic data base that provides support to programs concerned with fish and wildlife conservation and restoration. Its Office of Biological Services (OBS) is responsible for the National Coastal Ecosystems Team (NCET).

409. UNITED STATES GEOLOGICAL SURVEY: USGS

Established in 1879, USGS is responsible for collecting, analyzing, and publishing detailed information about the Nation's mineral, land, and water resources. It is one of the Government's foremost mapping agencies, responsible for detailed topographic mapping and for maintaining the National Cartographic Information Center (NCIC).

It provides hydrologic information and understanding needed for the optimum use and management of the Nation's water resources. The Office of Water Data Coordination (OWDC) in USGS maintains the National Water Data Exchange (NAWDEX), a computerized data system that identifies sources of water data; the Master Water Data Index (MWDI), which identifies sites for which water data are available and the types of water data at each site; the Water Data Sources Directory (WDSD), which identifies agencies or organizations having water data; and the National Water Data Storage and Retrieval System (WATSTORE), which provides access to all types of water data.

USGS enforces Department of the Interior regulations on leasing of Federal oil, gas, geothermal, and mineral resources including those on the Continental Shelf. It classifies these areas by their value for leasable minerals and evaluates them for tract selection or reserve inventory purposes. It supervises the operations of private industry on leases in public domains. It sponsored Continental Offshore Stratigraphic Tests (COST) in selected offshore sites. It maintains an Outer Continental Shelf Events File (OCSEF) to collect and organize oil spill and accident data.

USGS has the responsibility for EROS--the Earth Resources Observation System, a program to develop techniques to obtain and analyze remotely-sensed satellite data and data from aircraft imagery for

use in environmental management purposes. It operates the EROS Data Center (EDC), which provides access to the imagery.

It also maintains the National Earthquake Information Service (NEIS), which provides information on location, magnitude, and intensity of recent earthquakes.

410. DEPARTMENT OF STATE: DOS

The primary function of DOS is to provide the President with advice in the formulation and execution of foreign policy, including matters relating to ocean policy. The United States has a special representative at the Law of the Sea Conference (UNCLOS), and there is an Assistant Legal Adviser for Ocean, Environment, and Scientific Affairs.

A Bureau of Oceans and International Environmental and Scientific Affairs (OES), organized in 1973, formulates and implements policies and proposals for the scientific and technical aspects of marine science activities as they relate to other countries and international governmental organizations; represents DOS in international negotiations in its areas of responsibility; and provides guidance to the U.S. scientific community on activities and programs affecting foreign policy issues. Subunits of the Bureau are the Scientific and Technical Affairs (OES/SCI), Environmental and Population Affairs (OES/ENP), and Ocean and Fishery Affairs (OES/OFA). An Ocean Affairs Advisory Committee (OAAC) provides advice to the Secretary of State and to OES on matters relating to international cooperation.

The Department's Agency for International Development (AID) helps developing countries use their resources and assists in programs to train marine technicians in the developing countries.

DOS was closely involved in the negotiations establishing the 200-mile Exclusive Economic Zone (EEZ) and is responsible for negotiating Governing International Fisheries Agreements (GIFA) making surplus catches of fishes in the EEZ available to foreign governments.

411. DEPARTMENT OF TRANSPORTATION: DOT

DOT, established in 1966, is responsible for coordinating the Nation's transportation systems and for developing national programs and policies to promote transportation.

Its concerns with marine science activities are limited to the Office of Pipeline Safety (OPS) under the Assistant Secretary for Environment, Safety, and Consumer Affairs and to the U.S. Coast Guard. OPS is concerned with offshore drilling for gas and oil and the establishment of deepwater ports (DWPS). The U.S. Coast Guard is described in the following entry.

412. UNITED STATES COAST GUARD: USCG

USCG was formally established in 1915, though its antecedents date back to 1790 when it was the Revenue Cutter Service, a law enforcement agency. Over the years its functions and activities have broadened from that solely responsible for maritime law enforcement. Today it routinely collects oceanographic and meteorological observations on regular patrols and on International Ice Patrols (IIP), for which it is responsible under international agreements. The Coast Guard Oceanographic Unit (CGOU) provides scientific support to these activities, many of which are carried out in its Search and Rescue (SAR) program which involves efforts to obtain pertinent oceanographic data to develop a steady state model of seas for search and rescue operations. Most of its oceanographic projects are routine; however one was identified by an acronym, WEBSEC, for Western Beaufort Sea Ecological System. It has Airborne Radiation Thermometer

(ART) program flights off the U.S. coasts, which, in addition to providing sea-surface temperature data, also provide data about marine life, thermal pollution, and foreign fishing activities. The ART program off the Pacific Coast will terminate in 1979. It is, in cooperation with the National Marine Fisheries Service, (NMFS) responsible for enforcing the 200-mile extended jurisdiction established by the Fisheries Conservation and Management Act of 1976 (FEMA). The clean-up of hazardous substances, including oil, polluting U.S. navigable waters is another major responsibility. It developed a Pollution Incident Reporting System (PIRS), maintains a National Response Center (NRC) to receive reports of discharges and coordinate Federal response activities as they are needed, and maintains a National Strike Force (NSF) to be called to scenes of disaster to provide expertise and emergency equipment. It developed an Air-Borne Oil Surveillance System (AOSS) being installed on medium-range search aircraft to provide all-weather day and night detection of oil spills and an AirDelivered Anti-Pollution Transfer System (ADAPTS) to recover oil spills. It also monitors ocean dumping and recently developed an Ocean Dumping Surveillance System (ODSS).

USCG operated the Ice Navigation Center (INC) and a Central Oil Identification Laboratory (COIL). COIL was developed in 1978 to serve as the lead group within a national network of Field Oil Identification Laboratories (FOIL) to be located throughout the United States to identify spills by a chemical analysis of spill samples and to recommend appropriate cleanup measures.

The Deepwater Ports Act (DWPA) of 1974 gave DOT responsibility for all deepwater ports (DWP) that may be licensed, constructed, and operated on the high seas to transfer oil from tankers to shore sites. DOT in turn delegated to USCG most of the responsibilities for DWPs.

USCG operates a Marine Reporting Station Program (MARS) consisting of a network of about 200 coastal and offshore manned stations, most of which are operated by volunteers who make observations of weather, visibility, and wind and sea conditions. The data are forwarded to the National Weather Service (NWS). USCG is also responsible for the establishment and maintenance of aids-to-navigation in U.S. waters. Recently it developed a marine Safety Information System (MSIS), which, with the help of Lloyds of London, includes data on over 60,000 merchant ships as well as other analytical and statistical information. Its Auxiliary (USCGAUX), a volunteer organization of private boaters assists the National Ocean Survey (NOS) by providing information for updating its nautical charts.

Independent Agencies

413. ENVIRONMENTAL PROTECTION AGENCY: EPA

Established in 1970, EPA protects and improves our environment today and for future generations. Its mission is to control and abate pollution in the areas of air, water, solid waste, pesticides, noise, and radiation. Upon its establishment, it succeeded to the functions of the Federal Water Quality Administration (FWQA) in the Department of the Interior, which in turn had succeeded to the functions of the Federal Water Pollution Control Administration (FWPCA) established in the Department of Health, Education, and Welfare in 1965.

Major responsibilities for protection of water quality rests with EPA whose laboratories collect data from marine waters to establish a data base for water quality criteria. EPA reviews other ongoing monitoring programs for its National Water Quality Surveillance System (NWQSS).

EPA laboratories primarily concerned with the marine environment are the Corvallis (Oreg.) Environmental Research Laboratory (CERL), the National Marine Water Quality Laboratory (NMWQL) at Narragansett, R.I.; the Gulf Breeze Environmental Research Laboratory (GBERL) at Gulf Breeze, Fla.; and the Health Effects Research Laboratory (HERL) at Cincinnati, Ohio. CERL, organized in 1975, replaced the former National Environmental Research Center (NERC). Included under CERL are the Pacific Northwest Environmental Research Laboratory (PNERL), the National Ecological Research Laboratory (NERL), the Western Fish Toxicology Station (WFTS), and the Arctic Environmental Field Station (AEFS), formerly the Arctic Environmental Research Laboratory (AERL).

NMWGL is primarily responsible for developing standards of water quality for saltwaters and estuaries. HERL is concerned with the health effects related to shellfish growing. GBERL has a residual pesticide monitoring program to assess long-term toxic effects of pesticides on marine organisms.

Some of the marine-related programs undertaken by EPA and its predecessors include the National Estuarine Pollution Study (NEPS) by FWQA in 1969; the Biological and Climatic Effects Research (BACER) program, an interagency cooperative program for which EPA is the lead agency; the National Coastal Pollution Research Program (NCPRP), which became effective in 1973; and the National Pollution Discharge Elimination System (NPDES), required by the Federal Water Pollution Control Act (FWPCA).

EPA manages the Storage and Retrieval for Water Quality Data (STORET) system, a computerized data base of water quality data with information on water quality and water quality standards, point sources of pollution, pollution-caused fish-kills, and many other related items; and the Solid Waste Information Retrieval System (SWIRS).

414. FEDERAL MARITIME COMMISSION: FMC

Established in 1961, FMC inherited the regulatory functions of the Federal Maritime Board, which had in turn inherited them from the former U.S. Maritime Commission. It regulates U.S. waterborne domestic and foreign offshore commerce. Among its responsibilities is that of ensuring that there is evidence of adquate financial responsibility by owners and operators of vessels that may be liable for the cost of removing hazardous substances from U.S. navigable waters, shorelines, or waters of the contiguous zone.

415. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION: NASA

Established in 1958 and principally responsible for guiding the Nation's manned space and extraterrestrial flight program, NASA has in recent years become increasingly concerned with Earth-oriented environmental and related research and development programs. Its satellites observe and measure various weather and oceanic conditions, such as ocean wave spectra, sea state, wave heights, and oceanic pollution. It cooperates with the National Environmental Satellite Service (NESS) in the development of satellites and data products for environmental monitoring. It sponsors an Earth and Ocean Physics Application Program (EOPAP) and an Earth Resources Aircraft Program (ERAP). Recently it developed an Ocean Dynamics Information System (ODIS) that provides near-real time data on sea state, wind speed, Gulf Stream velocity, and position data from the GOES-3 satellite. Its Earth Resources Technology Satellite (ERTS) program was superseded by the LANDSAT program in NASA and the SEASAT program in NOAA's National Environmental Satellite Service.

Components of NASA involved in remote sensing activities include the Earth Resources Research Data Facility (ERRDF), the Goddard Space Flight Center (GSFC), the Lyndon B. Johnson Space Center (LBJSC), and the Wallops Flight Center (WFC). An Ocean Dynamics Advisory Subcommittee (ODAS) provides advice on the applications of satellite technology to ocean research. In 1976 it launched a Laser Geodynamics Satellite (LAGEOS) to obtain maximum geocentric coordinates of points on the Earth's surface in order to determine global plate tectonic motions, polar motions, and other phenomena of importance to geodynamics.

416. NATIONAL SCIENCE FOUNDATION: NSF

Established in 1950, NSF promotes the progress of science through the support of research and education. Its major emphasis is on basic research for the improved understanding of the fundamental laws of nature, and it supports these activities through grants, contracts, and other awards to universities and other research organizations.

The Assistant Director for Astronomical, Atmospheric, Earth, and Ocean Sciences (AAEO) is responsible for the overview of these programs and receives support and advice from the Advisory Panel for Oceanography (APO) and the Advisory Committee on Polar Programs (ACPP). Programs relating to environmental systems and resources, social systems and human resources, advanced technology applications, and exploratory research and problem assessment come under a collective program titled Research Applied to National Needs (RANN).

NSF supports the Arctic Offshore Program (AOP), the U.S. Antarctic Research Program (USARP), the International Decade of Ocean Exploration (IDOE), and the Ocean Sediment Coring Program (OSCP), which includes the Deep Sea Drilling Project (DSDP). It also supports the U.S. contributions to Global Atmospheric Research Program (GARP) and supported the U.S. contributions to the discontinued International Biological Program (IBP). It lends financial support to the University National Oceanographic Laboratory System (UNOLS); the National Center for Atmospheric Research (NCAR) operated by the University Corporation for Atmospheric Research (UCAR); and the Polar Ice Core Office (PICO) at the University of Nebraska which is responsible for planning and coordinating ice-core drilling programs.

417. NUCLEAR REGULATORY COMMISSION: NRC or NUREG

An independent regulatory agency, NRC was established in 1975 succeeding to the licensing and related regulatory functions assigned to the former Atomic Energy Commission (AEC).

Among NRC's responsibilities is the regulation of proposed and existing nuclear plants located in the coastal zone or in offshore waters. It requires in-depth environmental reports for the pre- and post-operational phases of these sites and prepares draft environmental impact statements (DEIS) based on the information submitted. These reports contain a wealth of environmental data regarding the marine environment in the vicinity of the sites.

A computerized information system, Information on Nuclear Site Data System (INSITE), was developed by the Argonne Laboratory to support NRC's efforts to develop guidelines for site evaluation.

418. SMITHSONIAN INSTITUTION: SI

Created in 1846, the Smithsonian, an independent trust establishment, perfoms research and publishes the results; preserves for study, reference, and exhibition millions of items of historical, social, or scientific interest; conducts educational programs; and

performs many more services in accordance with its mandate to increase and diffuse knowledge.

Its National Museum of Natural History (NMNH) administers the Smithsonian Oceanographic Sorting Center (SOSC) established in 1963 as a national facility for the acquisition and use of marine biological collections. It also sponsored the Pacific Ocean Biological Survey Program (POBSP) conducted in 1963, and the Investigations of Marine Shallow-Water Ecosystems Program (IMSWEP), a physical/chemical/biological study of a coral reef adjacent to Belize, Central America, in 1971. IMSWEP was partially coordinated with the program called Cooperative Investigations of Tropical Reef Ecosystems (CITRE) proposed by SI to be incorporated into the International Decade of Ocean Exploration (IDOE). While CITRE was not accepted for inclusion in IDOE, SI did some work on site selections and held related workshops.

SI's Chesapeake Bay Center for Environmental Studies (CBCES) makes studies of estuarine processes and promotes educational programs. The Smithsonian Tropical Research Institute (STRI), in the Republic of Panama, is devoted to the study of tropical biology, conservation, and education and operates two marine biology laboratories, one on the Atlantic side and the other on the Pacific side of the Isthmus.

The Smithsonian Science Information Exchange (SSIE), a nonprofit District of Columbia Corporation, collects, indexes, stores, and retrieves information on Government and nongovernment research projects and provides a number of services to help researchers keep informed about current efforts in their fields of interest. Late in 1978 an agreement was made to transfer SSIE to the Department of Commerce, where it will become part of the National Technical Information Service (NTIS).

SI operates the Scientific Event Alert Network (SEAN), formerly the Center for Short-Lived Phenomena (CSLP) and maintains a file of events, many of which occur in the marine environment. SI cooperates with the U.N. Environment Program's (UNEP) Informational Retrieval System (IRS), recently redesignated INFOTERRA. A new commission established in 1978, the U.S. Commission of Maritime History (USCMH), was placed under the direction of SI.

Quasi-official Agencies

419. NATIONAL ACADEMY OF SCIENCE-NATIONAL ACADEMY OF ENGINEERING-NATIONAL RESEARCH COUNCIL: NAS-NAE-NRC

A National Academy of Sciences (NAS) was established as a quasi-official agency in 1863 to further science and its use for the general welfare. The National Academy of Engineering (NAE) was established by the Council of NAS in 1970 to further engineering research in support of national needs. Both are honorary bodies, but can, by terms of the charter, be called upon to act as official advisers to the Federal Government in matters coming under their purview.

The National Research Council (NRC) was organized by NAS in 1916 and serves as the principal operating agency of NAS and NAE. It comprises a number of boards and committees. Those associated with NAS include the Ocean Sciences Board (NAS/OSB); the Transportation Research Board (NAS/TRB); the Environmental Studies Board (NAS/ESB); and the Geophysical Research Board (NAS/GRB).

The Ocean Sciences Board (NAS/OSB) was created in 1976 through a reorganization of the former Ocean Affairs Board (NAS/OAB), which had included an Ocean Science Committee (OSC), successor to the National Scientific Committee on Oceanography (NASCO), successor in turn to the NAS Committee on Oceanography (NAS/CO). NAS/OSB includes an Ocean

Policy Committee (OPC), formerly known as the International Marine Science Affairs Policy Committee (IMSAP), which serves as an adviser to Federal agencies on marine affairs aspects of pertinent national and international matters. During the Third Law of the Sea Conference, it has been supporting a Freedom for Ocean Sciences Task Group (FOSTG) to review its concerns that the new conventions drafted would increase the difficulties of performing oceanic research.

The Environmental Studies Board includes an International Environmental Programs Committee (IEPC), which provides interdisciplinary advice on international environmental problems and on U.S. initiatives presented at international conferences. It is also responsible for planning for the U.S. participation in the Global Environmental Monitoring System (GEMS).

The Geophysical Research Board includes a Committee on Data Interchange and Data Centers (CDIDC) which advises the U.S. participants in World Data Centers.

The Transportation Research Board's program includes the dissemination of information about research in many fields of transportation. It operates the Maritime Research Information Service (MRIS), a system for the acquisition, selection, storage, retrieval, and dissemination of references to projects, technical reports, and journal articles in the maritime field.

The NRC's Ship Research Committee (SRC) provides services in connection with the research program of the Ship Structure Committee (SSC) established in 1946 to research ship structures and their equipment. NRC also includes coordinating committee on Scientifie and Technical Assessment of Environmental Pollutants (STAEP).

Other boards and committees include the Committee of Ecological Research for the Interoceanic Canal (CERIC), organized in 1969 to review and make recommendations regarding the accomplishments of the Atlantic-Pacific Interoceanic Canal Study Commission. CERIC's report was completed in 1970. The Committee on Nuclear and Alternative Energy Sources (CONAES) has concerned itself with the establishment of nuclear energy plants offshore or on the coasts and with developing other energy sources in the ocean; a Committee on Water (COW); and the Board on Ocean Science Affairs (BOSA), a temporary title.

Associated with the National Academy of Engineering is a Marine Board (NAE/MB), formerly the Committee on Ocean Engineering (NAE/COE).

B. STATE AGENCIES AND ORGANIZATIONS

420. ALABAMA

Alabama's Departments of Public Health (DPH) and Conservation and Natural Resources (DCNR) are concerned with the marine environment. The latter includes a Division of Fish and Game and a Marine Resources Division, which operates the Alabama Marine Resources Laboratory (AMRL) on Dauphin Island.

In 1971 the State legislature chartered the Marine Environmental Science Consortium (MESC), a public nonprofit corporation that supports the 18-member universities and colleges in Alabama with necessary marine related course offerings to satisfy their degree programs. MESC is at the Dauphin Island Sea Laboratory (DISL).

421. ALASKA

The State's marine science activities are concentrated largely in the Departments of Environmental Conservation (ADEC) and Fish and Game (ADF&G). The State also supports the Alaska Eskimo Whaling Commission (AEWC).

The marine science activities at the University of Alaska (UAL) are included in the Institute of Marine Science (IMS), the Geophysical Institute, the Institute of Water Resources (IWR), and the Institute of Arctic Biology (IAB). The University is responsible for the Alaska Sea Grant Program (ASGP). It operates the Arctic Environment Information and Data Center (AEIDC), established by the Alaska Legislature in 1972. Under contract to the Office of Naval Research, it operates the Naval Arctic Research Laboratory (NARL or ARL).

The University is deeply involved with the Outer Continental Shelf Environmental Assessment Program (OCSEAP) and in addition is responsible for the program called Processes and Resources of the Bering Sea Shelf (PROBES).

The Alaska Fisheries Development Corporation (AFDC) is a nonprofit organization established in 1978 to promote Alaska's fishing industry through research and education.

422. CALIFORNIA, State Agencies

Marine science and research activities at the State level are handled by California Resources Agency, which includes its Department of Fish and Game (CDFG), the Department of Navigation and Ocean Development (CDNOD), and the Department of Water Resources (CDWR).

The Department of Fish and Game is responsible for major investigative activities in biological sciences and is one of the cooperating agencies on the Marine Research Committee (MRC), which is responsible for the California Cooperative Oceanic Fisheries Investigations (CCOFI) or CalCOFI), an extensive data-collecting program that began in the 1950's and is still continuing. Other participants on the Council are the California Academy of Sciences (CAS), Hopkins Marine Station (HMS) of Stanford University, Scripps Institute of Oceanography (SIO), and the Southwest Fisheries Center (SWFC) of the National Marine Fisheries Service. CDFG is cooperating with SWFC in the development of the Pacific Area Cooperative Enforcement System (PACES), which was implemented in October 1978. The California Marine Fisheries Council (CMFC) provides advice to CDFG.

The Department of Navigation and Ocean Development (CDNOD) is concerned with California's navigable rivers, harbors, and coastal waters. In cooperation with the U.S. Army Corps of Engineers, it is developing the California Coastal Engineering Data Network (CCEDN), a wave and climatic data-gathering program for the California coast that was initiated in 1976.

The State Water Resources Control Board (CSWRCB), formerly the State Water Quality Control Board (CSWQCB), comprising a number of regional boards, is responsible for protecting and improving the State's total water environment.

The Department of Water Resources (CDWR) is responsible for major investigative functions pertaining to hydrology, physical and chemical conditions, and engineering considerations in the marine area.

The Resources Agency includes a Sea Grant Advisory Panel (RASGAP) created in 1973 to administer funds appropriated by the State legislature for distribution as local matching funds for projects under the National Sea Grant College and Program Act of 1966. Members of RASGAP include representatives from State agencies, concerned industries, and academic organizations.

Other departments or agencies of interest are the Bureau of Sanitary Engineering within the Department of Public Health and the Department of Parks and Recreation, both of which are concerned with guarding public rights in their spheres of interest.

In 1967 the California Advisory Commission on Marine and Coastal Resources (CACMCR or CMC) was created to recommend a structure to

implement requirements for Statewide coastal planning. It developed a Comprehensive Ocean Area Plan (COAP), also referred to as the California Ocean Area Plan. Upon completion of its mission in 1973, it was disbanded.

The California Coastal Zone Management and Conservation Commission (CCZMCC) was established in 1972 to continue the California coastal zone management Program.

423. CALIFORNIA, Local Organizations

Among the local organizations involved in marine affairs is the Southern California Coastal Water Research Project (SCCWRP) founded in 1969 by five local government agencies, the cities of Los Angeles and San Diego, and the county sanitation districts of Los Angeles, Orange, and Ventura Counties. The objective of the project was to develop regional scientific information on the coastal waters from Point Conception to the Mexican border.

The San Francisco Bay Conservation and Development Commission (SFBCDC or BCDC) was established in 1965 and is responsible for regional planning in the bay area.

In the Santa Barbara area a citizens group called GOO (Get the Oil Out), organized in 1969, is working for limited development of oil resources in the Santa Barbara channel until technology advances to the point that the odds against disasters will be increased greatly. The Santa Barbara Mariculture Foundation (SBMF), a volunteer group, is working to restore aquatic life, particularly the abalone.

424. CALIFORNIA, State Universities and Colleges

The University of California (UC) includes the Institute of Marine Resources (IMR), located at San Diego, but serving the entire university system. IMR supports research in the sea, administers the University's Sea Grant Program, and supports the Food Chain Research Group (FCRG). The latter was organized in 1963 to study the marine food web, and, in 1974, it instituted the Southern California Bight Studies (SCBS).

Scripps Institution of Oceanography (SIO) has been affiliated with UC since its establishment in 1912 and is now a part of the University's San Diego (UCSD) campus. SIO includes the Advanced Ocean Engineering Laboratory (AOEL) and the Marine Physical Laboratory (MPL). It operates two research platforms: Floating Instrument Platform (FLIP) and the Oceanographic Research Buoy (ORB). ORB serves as a surface launch for research equipment and as a work area.

SIO supported the Scripps Tuna Oceanography Research program (STOR) from 1957 to 1973 when the program was cancelled. It is project manager for the Deep Sea Drilling Project (DSDP) carried on by a consortium of five oceanographic institutions known as the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). It is making a Nearshore Sediment Transport Study (NSTS) as a part of its Sea Grant program.

The University of California was designated a Sea Grant College in 1973, and its program incorporates or consolidate all Sea Grant activities in the University of California and California State University. The California Marine Advisory Program (CMAP) was established to coordinate marine-related activities at the several universities and colleges and to provide citizen access to expertise at all institutions.

UC includes the Bodega Marine Laboratory (BML), a support facility for several campuses. Its Lawrence Livermore Laboratory (LLL) is concerned with nuclear radiation, including that in the marine environment, and its Lawrence Berkeley Laboratories (LBL) is concerned

with the development of energy sources, including those in the marine environment.

Its Santa Barbara (UCSB) campus supports a Marine Science Institute (MSI), and its Department of Geology is active in one marine environment. Its Davis campus (UCD) Departments of Zoology and Biological Sciences are active in marine research. Its Santa Cruz (UCSC) campus supports a Coastal Marine Laboratory (CML).

Humboldt State University (HSU) has long been active in marine sciences. It has a Sea Grant Program (HSUSG) and operates a marine laboratory at Trinidad Head.

The Southern California Ocean Studies Consortium (SCOSC), a consortium of five State universities and one State college, was formed to provide an educational and research outlet for their marine programs. Members are the California State University at Fullerton (CSUF), at Long Beach (CSULB), at Los Angeles (CSULA), at Northridge (CSUN), and at Pomona (CSUP), and the California State College at Dominiguez Hills (CSCDH)).

The Moss Landing Marine Laboratories (MLML) is jointly owned by a consortium of five State universities at Fresno (CSUF), Hayward (CSUH), Sacramento (CSUS), San Francisco (CSUSF), and San Jose (CSUSJ), and a State college at Stanislaus (CSCS).

425. CALIFORNIA, Private Universities

Private universities include Stanford University (SU), the University of the Pacific (UP), and the University of Southern California (USC).

SU's Department of Biological Sciences operates the Hopkins Marine Station (HMS), which specializes in marine biological training and research. UP operates the Pacific Marine Station (PMS), a year-around research center that emphasizes marine ecology and systematics.

USC has long been active in marine research and education. Its Institute for Marine and Coastal Studies (IMCS) is a Sea Grant participant, and it operates the Catalina Marine Sciences Center (CMSC). USC's Allan Hancock Foundation (AHF) is entirely devoted to marine research. USC and Los Angeles County cooperate in operating a medical center that performs research on venomous marine fishes.

426. CONNECTICUT

Marine research at the State level is largely the responsibility of the Department of Environmental Protection (DEP), which is concerned with fish wildlife, and water resources. Connecticut is also involved in a coastal zone management program and in 1975 established a State/Federal committee called the Coastal Area Management (CAM) to develop the state's plan.

The University of Connecticut (UCT) includes a Marine Science Institute (MSI) that is especially concerned with identifying industrial pollution in Connecticut's marine environment.

Yale University (YU), a private institution, supports some marine research activities, principally in marine biology. It includes the Bingham Oceanographic Laboratory (BOL) and sponsors a joint research program with Woods Hole Oceanographic Institution (WHOI).

427. DELAWARE

Delaware's Department of Natural Resources and Environmental Control (DNREC) includes divisions of Environmental Control and Fish and Wildlife, both of which are concerned with research in the marine environment. Coastal zone management is the responsibility of its Office of Management, Budget, and Planning (OMBP).

Marine science activities at the University of Delaware (UDE) are centered at the College of Marine Science (CMS), which is also responsible for Delaware's Sea Grant (DESG). One of DESG's activities is Project COAST (Coastal and Oceanic Awareness Studies), which has made marine education its goal. It has developed marine curricula and lists of resources for marine educators at all levels.

In 1977 DESG was instrumental in developing the Comprehensive Atlantic Offshore Oceanographic Plan (CAOOP) a plan in which other east coast Sea Grant institutions, Federal agencies, and marine-oriented industries are invited to participate.

428. FLORIDA

Florida's Department of Natural Resources (DNR) is concerned with the State's marine resources and includes a Division of Marine Resources responsible for the Marine Research Laboratory (MRL) and other activities such as beach erosion control and coastal research. DNR's Division of Environmental Research is responsible for the Coastal Coordinating Council (CCC) and Florida's coastal zone management plan. The Division developed an inventory of the natural resources of Florida known as the Florida Resources Information System (FLORIS). DNR's Division of Interior Resources manages Florida's waterways including the Intracoastal Waterway (ICWW) and is responsible for geological surveys and explorations for offshore resources.

The State University System of Florida (SUSF) organized the State University System Institute of Oceanography (SUSIO), which coordinated the marine science activities of member universities: Florida A&M University (FAMU), Florida Atlantic University (FAU), Florida International University (FIU), Florida Technological University (FTU), Florida State University (FSU), the University of Florida (UF), and the Universities of North Florida (UNF), South Florida (USF), and West Florida (UWF). SUSIO coordinated the exhaustive study of the Eastern Gulf of Mexico (EGMEX) and the study of the outer shelf area of Mississippi-Alabama-Florida (MAFLA). In 1978 SUSIO was replaced by the Florida Institute of Oceanography (FIO), a larger institution.

The University of Florida's Department of Biological Sciences operates two marine laboratories, one on the east coast and one on the west coast. Its Communication Sciences Laboratory specializes in underwater speech communications. It also includes a Coastal Engineering Laboratory.

The other members of SUSF have marine science programs. FSU includes a Department of Oceanography, a Geophysical Fluid Dynamics Institute (GFDI), the Edward Ball Marine Laboratory (EBML), and the Antarctic Marine Geology Research Facility (AMGRF). The latter is the national repository for the storage of and the laboratory for the analysis of cores collected during the U.S. Antarctic Research Program (USARP) sponsored by the National Science Foundation.

The University of Miami (UM), a private institution, has an extensive program in marine research, conducted largely by the Rosenstiel School of Marine and Atmospheric Science (RSMAS), established originally as the Institute of Marine Science (IMS). RSMAS conducted a program of Synoptic Observations of Profiles in the Straits of Florida (SYNOPS) in 1971. In 1970 it began the North Atlantic Gyre Studies (NAGR). It developed the Radar Sea State Analyzer (RASSAN). The Gulf and Caribbean Fisheries Institute (GCFI) is at RSMAS. UM's School of Engineering and Environmental Design (SEED) is responsible for ocean engineering courses.

429. GEORGIA

The Divisions of Environmental Protection, Game and Fish, and Coastal Resources within the Department of Natural Resources (DNR) are concerned with Georgia's marine environment. The Coastal Planning and Development Commission (CPDC) is responsible for coastal planning.

In 1967 the Georgia legislature created the Ocean Science Center of the Atlantic Commission (OSCA), which in turn established the Skidaway Institute of Oceanography (SIO or SKIO) within the university system to serve as a marine research facility for the 31 colleges and universities within the State. In 1972 OSCA was abolished. SKIO is responaible for the management of Georgia's Sea Grant Program. The University of Georgia (UGA) has several departments with concerns in the marine environment and sponsors a Marine Institute on Sapelo Island.

430. HAWAII

The State includes a Department of Lands and Natural Resources (DLNR), a Department of Planning and Economic Development (DPED), and an Office of Engineering Quality Control (OEQC), all of which have interests in the marine environment. In 1972-73 DPED, in cooperation with the National Science Foundation, held an Environmental Conference on the Public Understanding of Science in Hawaii (ECOPUSH), which included many programs on marine research and aquaculture.

Marine science activities are widespread throught the University of Hawaii (UNHI) and especially in the Departments of Oceanography and Ocean Engineering. Affiliated with UNHI are the Hawaii Institute of Geophysics (HIG), Hawaii Institute of Marine Biology (HIMB), J.K.K. Look Laboratory of Oceanographic Engineering (LLOE), Pacific Biomedical Research Center (PBRC), Water Resources Research Center (WRRC), Hawaii Environmental Simulation Laboratory (HESL), and the East-West Center Food Institute (EWCFI), all of which are active in marine-oriented research. HIG was involved in the Pacific Acoustic Research Kaneohe-Alaska (PARKA) project in 1969.

UNHI is responsible for the Law of the Sea Institute (LOSI), formerly at University of Rhode Island's Graduate School of Oceanography. UNHI is a participant in the Sea Grant Program (UNHISG) and under the sponsorship of the program, developed an Ocean Science Information Center (OSIC) and the Marine Option Program (MOP). The latter allows all students, regardless of their major field, to participate in marine educational programs. UNHI developed a crew-carrying ocean-going spar buoy known as the Manned Open Sea Experimentation Station (MOSES).

431. ILLINOIS

The State's Environmental Protection Agency (EPA) and its Department of Conservation (DOC), which includes a Division of Fisheries, are involved with the coastal regions of Lake Michigan.

432. INDIANA

Its Environmental Conservation Commission (ECC), and the Division of Fisheries and Wildlife within the Department of Natural Resources (DNR) are responsible for its coastal activities.

433. LOUISIANA

Louisiana's Wildlife and Fisheries Commission (LWFC) and the Departments of Conservation (DOC) and Transportation and Development (DOTD) are active in marine projects. An advisory Commission on Coastal and Marine Resources (ACCMR) participates in decisions

regarding the coastal areas. The State established Louisiana Offshore Terminal Authority (LOTA) to monitor activities of the Louisiana Offshore Oil Port Corp. (LOOP) being developed by a consortium of oil and pipeline companies.

The Louisiana State University (LSU) includes a Center for Wetland Studies (CWS) formed in 1970 to bring together three marine-oriented groups--the Coastal Studies Institute (CSI), the Department of Marine Science (DMS), and the Office of Sea Grant Development (OSGD). CSI, which has been in existence for a number of years, has a worldwide reputation and performs research in coastal areas throughout the world.

434. MAINE

The State government includes a Natural Resources Council (NRC) responsible for coastal zone activities; and Departments of Environmental Protection (DEP), Sea and Shore Fisheries (DSSF), and Marine Resources (DMR), all of which are involved in the marine environment. An Interim Marine Affairs Council (IMAC) was appointed to serve as an advisory board to determine the means by which a permanent council should be established and to develop goals. An Atlantic Sea Run Salmon Commission (ASRSC) was established in 1947 to protect and improve the dwindling salmon population.

In 1968 a consortium of institutions of higher education organized The Research Institute of the Gulf of Maine (TRIGOM) to promote marine and coastal research. The University of Maine (UM) is a participant in TRIGOM and in the Sea Grant Program. The Southern Maine Marine Vocational Training Institute (SMMVTI) specializes in the training of oceanographic technicians. The Bigelow Laboratory for Ocean Sciences (BLOS), a division of the Northeastern Research Foundation, is at West Boothbay Harbor.

435. MARYLAND

Maryland's Department of Natural Resources (DNR) is responsible for the Maryland Environmental Services (MES) and the Fish and Wildlife Administration (F&WA), both of which are concerned with the marine environment. A Coastal Resources Advisory Commission (CRAC) was appointed to help develop the coastal zone plan.

The University of Maryland (UMD) includes a Center for Environmental and Estuarine Studies (CEES) and a Natural Resources Institute (NRI) which specializes in the Chesapeake Region. The University also manages the Chesapeake Biological Laboratory (CBL).

The Johns Hopkins University (JHU) supports the Chesapeake Bay Institute (CBI) formed in 1948 to provide laboratory and field support for marine science activities. JHU's Applied Physics Laboratory (APL) also does research in marine sciences.

436. MASSACHUSETTS

The State government includes an Executive Office of Environmental Affairs (EOEA) and a Department of Fisheries and Wildlife (DFWRV), both of which have interests in the marine environment.

The publicly funded University of Massachusetts (UMA) supports a marine science program and includes a Coastal Research Center (CRC), formerly the Coastal Research Group (CRG).

Independent universities of interest are Boston University whose marine program is referred to as BUMP, and the Massachusetts Institute of Technology (MIT). The latter is heavily involved in marine research and is a Sea Grant Institution (MITSG), which is responsible for the Marine Industry Advisory Services Program (MIDAS). MIT established a Marine Resources Information Center (MARIC), has courses

in Planning for Offshore Ports (POP), conducted the New England Coastal Area Planning Program (NECAP) in 1970, and sponsored a Study of Critical Environmental Problems (SCEP) in 1970, which identified marine pollution as one of the critical problems. It cooperates with Woods Hole Oceanographic Institution in joint MIT/WHOI programs in oceanography and ocean engineering. Its Ralph M. Parsons Laboratory for Water Resources and Hydrodynamics (RMPLWRH) is devoted to teaching and research, especially in engineering.

The Woods Hole Oceanographic Institution (WHOI), founded in 1930, has worldwide recognition. It participates in many programs and is currently housing the POLYMODE Office and the University National Oceanographic Laboratory System (UNOLS). UNOLS, established in 1972, superseded the Council of Oceanographic Laboratories Directors (COLD). The concept of UNOLS was developed by the Stratton Commission, which urged that university and other research laboratories coordinate their research efforts and access to ships, submersibles, and other research facilities. The New England Cooperative Coastal Research Facility (NECCRF) is located with UNOLS.

WHOI performed the Internal Wave Experiment (IWEX) off Bermuda in 1973 and supports the Acoustic Model Evaluation Committee (AMEC).

437. MICHIGAN

Michigan's Department of Natural Resources (DNR) includes the coastal areas of Michigan in its concerns. The University of Michigan (MICHU) includes a Department of Atmospheric and Oceanic Science and a Great Lakes Research Division (GLRD). It operates the Great Lakes and Marine Waters Center (GLMWC) and is a Sea Grant Institution (MICHUSG).

The Environmental Research Institute of Michigan (ERIM) was established in 1973 by special act of the Michigan legislature as a nonprofit research corporation, succeeding to the activities of the former Willow Run Laboratories of the University of Michigan. Much of ERIM's activities are centered around remote sensing of the environment. It has a Center for Remote Sensing Information and Analysis (CRISIA), which performs research in environmental monitoring and Earth resources surveys and sponsors the International Symposiums on Remote Sensing of the Environment.

Its Infrared Information Analysis Center (IRIA) is concerned with the identification and surveillance of pollutants. IRIA sponsors the National Infrared Information Symposiums (IRIS). Recently ERIM acquired the personnel and faculties of the Earth Resources Data Center (ERDC) formerly a part of the Bendix Corporation.

438. MINNESOTA

The State's Pollution Control Agency (PCA) and its Department of Natural Resources (DNR) are concerned with research and conservation of the State's coastal area.

The Universfty of Minnesota (UMN) is a Sea Grant Program participant and instituted the Minnesota Marine Advisory Service (MMAS) in 1975. The University also supports the Lake Superior Basin Studies Center (LSBSC) established in 1973.

439. MISSISSIPPI

State agencies concerned with marine research include the Mississippi Air and Water Pollution Control Commission (MAWPCC), the Mississippi Game and Fish Commission (MGFC), and the Mississippi Marine Conservation Commission (MMCC).

In 1947 the State established the Gulf Coast Research Laboratory (GCRL), which is affiliated with a number of universities and colleges

in Mississippi and other States concerned with research in the Gulf of Mexico. The University of Mississippi (UM) is affiliated with GCRL, is a member of the Mississippi-Alabama Sea Grant Consortium (MASGP), and a member of the Gulf Universities Research Consortium (GURC). Mississippi State University (MSU) is also affiliated with GCRL.

440. NEW HAMPSHIRE

The State's Department of Fish and Game (DFG) is responsible for much of the State's program in marine research.

The University of New Hampshire (UNH) is a Sea Grant Program participant. It operates the Jackson Estuarine Laboratory (JEL) and the Engineering Design and Analysis Laboratory (EDAL). EDAL designed an underwater habitat known as EDALHAB.

441. NEW JERSEY

New Jersey's Department of Environmental Protection (NJDEP) and its Division of Fish, Game, and Shellfisheries are concerned with the State's marine programs.

Twenty-two of the universities and colleges of New Jersey form the Marine Sciences Consortium (MSC), which sponsors the Sandy Hook Marine Laboratory (SSML). Rutgers, the State University of New Jersey, has a Marine Sciences Center (MSC) that interacts with many of the departments in the university system.

442. NEW YORK

New York's Department of Environmental Conservation (DEC) includes a Division of Fisheries and Wildldfe concerned with New York's shorelines along the Atlantic and along the Great Lakes.

The New York Ocean Science Laboratory (NYOSL), a center for programs in marine sciences, particularly the development of tidal and coastal waters for aquaculture, is supported by a consortium of eight universities and colleges including New York University (NYU) and the State University of New York (SUNY). SUNY includes a number of campuses with marine science activities served by the Marine Sciences Research Center (MSRC) at the Stony Brook campus. SUNY and Cornell University compose a consortium responsible for the New York Sea Grant Institute (NYSGI). The City University of New York (CUNY) also supports marine-related research.

A number of advisory committees and commissions have interests in marine activities and include the Commercial Fisheries Advisory Committee (CFAC), the Marine Youth Education Advisory Committee (MYEAC), the Lake Erie Advisory Commission (LEAC), the Coastal Water Resources Advisory Committee (CWRAC), and the Coastal Recreation Advisory Committee (CRAC).

Local regional planning boards of interest are the Erie-Niagara Counties Regional Planning Board (ENCRPB) and Nassau-Suffolk Regional Planning Board (NSRPB). A volunteer, nonprofit organization called the Marine Environmental Council of Long Island (MECLI) is concerned with protection of the Island's marine environment.

Independent universities of interest are Columbia and Cornell. Columbia's Lamont-Doherty Geological Observatory (LDGO), formerly the Lamont Geological Observatory (LGO), has varied interests in marine biology, geology, and physical/chemical oceanography. It is especially involved in the U.S. Antarctic Research Program (USARP) and in several of the programs of the International Decade of Ocean Exploration (IDOE). Its prime concerns are in marine geology, and it maintains an extensive collection of ocean bottom photographs and deep sea cores.

Cornell cooperates with the State University System in the Sea Grant Program and operates the Shoals Marine Laboratory (SML) in cooperation with SUNY, and the Sea Education Association (SEA) in cooperation with the University of New Hampshire and SUNY.

443. NORTH CAROLINA

The Department of Natural Resources and Community Development (DNRCD) and its Office of Fish and Wildlife are concerned with the State's marine areas. The North Carolina Office of Coastal Management (NCOCM) is responsible for developing and managing the coastal zone in accordance with the 1972 Federal act and the North Carolina Coastal Area Management Act of 1974 (CAMA). A Coastal Resources Commission (CRC) provides advisory services.

The University of North Carolina (UNC) and the North Carolina State University (NCSU) cooperate in marine science programs including the Sea Grant Program. They support a Marine Research Center (MRC) at three sites along North Carolina's coast. NCSU includes a Center for Marine and Coastal Studies (CMCS). East Carolina University (ECU), also State supported, sponsors the Institute for Coastal and Marine Resources (ICMR). Duke University, a private institution, includes the Duke University Marine Laboratory (DUML). In 1972 North Carolinians organized the Sound and Sea Fisherman's Association (SSFA) to restore commercial fishing.

444. OHIO

Ohio's Department of Natural Resources (DNR) and its Division of Fisheries and Wildlife are concerned with coastal areas. The State University (OSU) has a Center for Lake Erie Area Research (CLEAR).

445. OREGON

The Department of Environmental Quality (DEQ) and the Oregon Fish Commission (OFC) are State agencies involved in marine activities. Advisory groups include the Oregon Estuarine Research Council (OERC) and the Oregon Coastal Conservation and Development Commission (ORCDC).

The Oregon State University (ORESU) has an active marine research program largely vested in the School of Oceanography. It is also a participant in the Sea Grant Program (ORESG). ORESU participates in the Coastal Upwelling Ecosystem Analysis project (CUEA) of the International Decade of Ocean Exploration (IDOE); sponsors its own Upwelling Project (UP) of continuing studies of upwelling along the Oregon coast; made a winter-spring (WISP) study of the transition of oceanographic conditions from winter to spring off the Oregon coast in 1975; and in cooperation with Canadian organizations performed a Mixed Layer Experiment (MILE) that measured the temperature microstructure in the North Pacific at Ocean Station 'P' in 1977.

446. PENNSYLVANIA

The department of Environmental Research (DER) and the Pennsylvania Fish Commission (PFC) are concerned with marine science research and protection of Pennsylvania's marine environment. The Delaware Valley Regional Planning Commission (DVRPC) was created to advise on the development of the State's coastal zone along the Delaware River.

In 1968, Lehigh University (LU), an independent institution, established a Center for Marine and Environmental Studies (CMES) to serve as an interdepartmental research organization to promote research in marine science, ocean engineering, and environmental

research. LU operated the Wetlands Institute (WI), a separate non-profit organization funded in part by the World Wildlife Fund (WWF), which promotes research and public education. The Institute for Development of Riverine and Estuarine Systems (IDRES), a consortium of institutions in Pennsylvania and Delaware, is affiliated with LU.

447. PUERTO RICO

The Puerto Rico Water Resources Authority (PRWRA) is concerned with the use and conservation of Puerto Rico's marine environment. The Commonwealth also supports the Puerto Rico International Undersea Laboratory (PRINUL) and the Puerto Rico Undersea R&D Corp. (PRURDCO).

The University of Puerto Rico (UPR) includes a Department of Marine Sciences (DMS), formerly the Institute of Marine Biology (IMB). It sponsors the Institute of Caribbean Science (ICS); the Center for Energy and Environment Research (CEER), which is involved in researching an Ocean Thermal Energy Conversion (OTEC) site off Puerto Rico's coast; and the Puerto Rico Nuclear Center (PNRC), which is involved in environmental studies for a potential coastal nuclear generating plant.

448. RHODE ISLAND

Rhode Island's Department of Natural Resources (DNR) and the Fish and Wildlife Division of DNR perform research in the marine environment at the State level. Its Council of Environmental Quality (CEQ) works to conserve and improve the marine environment, and its Coastal Resources Management Council (RICRMC), established in 1971, maintains and regulates its coastal resources.

The University of Rhode Island (URI) includes a Graduate School of Oceanography (GSO) at the Narragansett Marine Laboratory (NML). URI is a Sea Grant Institute and is responsible for the National Sea Grant Depository (NSGD) at URI's Pell Marine Science Library (PMSL). The New England Marine Advisory Service (NEMRIP), an association of marine advisory, extension, and educational programs supported by the Sea Grant Program Office of NOAA, is at URI.

URI also supports a Center for Ocean Management Studies (COMS). For many years it was responsible for the Law of the Sea Institute (LOSI), now at the University of Hawaii. It is currently involved in the Cetacean and Turtle Assessment Program (CETAP) funded by the Bureau of Land Management (BLM).

449. SOUTH CAROLINA

South Carolina's Wildlife and Marine Resources Department (WMRD) and its Marine Resources Research Institute (MRRI) have active research programs in the State's marine environments. Its Department of Health and Environmental Control (DHEC) is also concerned. In 1977 the State established the South Carolina Coastal Council (SCCC) to plan its coastal zone management program.

The University of South Carolina (USC) operates the Belle W. Baruch Institute for Marine Biology and Coastal Research (BIMBCR or BWBIMBCR), which studies coastal water estuaries and wetlands including pollution of and analyses of undisturbed marsh-estuarine ecosystems. In 1975 USC established an Oil-Spill Assessment Team (OSAT) to study spills and to develop a system to classify shoreline types as to their vulnerability to spills.

450. TEXAS

Included among the State agencies with interests in the marine environment are the General Land Office (GLO), responsible for development of the coastal zone; the Parks and Wildlife Department (PWD) and

its divisions of Fish and Wildlife and Environment; the Texas Water Quality Board (TWQB); and the Texas Deepwater Ports Authority (TDPA), established by the State in 1978 to assume the activities of SEADOCK. SEADOCK, a consortium of oil companies developing a deepwater port off the Texas coast, no longer exists. The Texas Coastal and Marine Council (TCMC) advises on the coastal zone management plan.

State-supported institutions with marine science-related activities include the University of Texas (UT) and Texas A&M University (TAMU). The University of Texas includes a Marine Science Institute (MSI) and a Medical Branch (UTMB) which, together with other institutions in Texas, support the Marine Biomedical Institute (MBI). MBI promotes research in and supports the Flower Garden Ocean Research Center (FGORC). UT also suppots a Center for Research in Water Resources (CRWR).

TAMU supports a Center for Marine Resources (CMR), which coordinates marine research activities at TAMU, most of which are conducted by the Departments of Oceanography and Meteorology. TAMU supports the Center for Dredging Studies (CDS). It includes departments of marine sciences, marine engineering, marine transportation and nautical science, and ocean engineering and is a Sea Grant Institute.

451. VIRGINIA

A Council on Environmental Quality (CEQ) in the Governor's Office includes the conservation and protection of the marine environment among its concerns. The Commission of Game and Inland Fisheries (CGIF) also sponsors marine-related research. Virginia's Office of Secretary of Commerce and Resources (OSCR) is responsible for Virginia's Coastal Resources Management Study (CRMS). The Virginia Marine Resources Management Advisory Committee (CRMAC) provides advice to the newly created Coastal Study Commission (CSC) charged with developing CRMS.

VIMS, the Virginia Institute of Marine Science, an independent State agency formerly titled the Virginia Fisheries Laboratory (VFL), is affiliated with the University of Virginia (UVA) and the College of William and Mary. VIMS developed the Marine Environmental and Resources Research Management System (MERRMS), which includes an inventory of the State's wetlands, shallows, and shorelines; a bibliography on Chesapeake Bay; and other data banks and resources to answer research needs. It also developed the National Aquaculture Information System (NAIS), which is included in NOAA's Oceanic and Atmospheric Sciences Information System (OASIS). It is the lead member of the Marine Educational Materials System (MEMS) in which nine other institutions participate to provide sources of information to educators and students involved in marine studies. Its projects include the development of the Virginia Sea Wave Climate Model (VSWCM) for the Mid-Atlantic Bight and the Chesapeake Bay Wave Climate Model (CBWCM).

UVA's main thrust in marine affairs is in ocean law, and in 1976 it established a Center for Ocean Law and Policy (COLP). The Virginia Polytechnic Institute and State University (VPISU) is a Sea Grant participant specializing in seafood research. Old Dominion University (ODU), a private institution, sponsors an Institute of Oceanography.

Another acronym associated with Virginia is TARAV--Tidewater Artificial Reef Association of Virginia.

452. WASHINGTON

Washington's Departments of Ecology (DOE) and of Fisheries (DOF) carry on research in the marine environment at the State level. The State also funds the Oceanographic Commission of Washington (OCW), a

policy-oriented commission supported in research and other action items by the Oceanographic Institute of Washington (OIW), a nonprofit research and education corporation. OIW operates the Northwest Regional Calibration Center (NRCC) and has studies and programs in marine resource use, environmental protection, marine education, fishing, vessel safety, and aquaculture.

The University of Washington (UW) has an active marine research as it relates to atmospheric research, particularly in the Arctic. The College of Fisheries has been involved in research in fishery problems in the Pacific Northwest since 1919. The Division of Marine Resources is responsible for Washington's Sea Grant Program (WSG), and an Institute for Marine Studies (IMS) fosters innovative interdisciplinary courses of study and new approaches to marine policy research. It is also one of the major participants in the Rivera Ocean Seismic Experiment (ROSE), a program being conducted in the eastern Pacific to understand how new material placed at an accreting plate boundary evolves into the "typical" structure postulated for the outer 100 km of the Earth's surface.

Among the university projects was SEA USE, a 1968 project to place a habitat on the Cobb Seamount and the North Pacific Fisheries Project (NORFISH), an ongoing project of the Sea Grant program begun in 1971. NORFISH is developing a total systems analysis of the North Pacific fisheries in cooperation with the fishing industry, Federal and State agencies, and universities; the objective is to conserve fishery resources.

Gray's Harbor College (GHC) participates in the Washington Sea Grant Program and provides vocational training in fish and game management and mariculture. It is responsible for the Ocean Shores Marine Information Center (OSMIC), a Sea Grant-sponsored project to provide marine information to the public.

453. WISCONSIN

The Department of Natural Resources (DNR) is responsible for State marine research activities and includes an Environmental Protection Division and a Fish Management Section.

The University of Wisconsin (UWIS) is a Sea Grant Program participant (WISSG). It is responsible for the Center for Great Lakes Studies (CGLS) and the Geophysical and Polar Research Center (GPRC).

C. REGIONAL ORGANIZATIONS

454. ATLANTIC STATES MARINE FISHERIES COMMISSION: ASMFC

Established in 1942 by the Atlantic States Marine Fisheries Compact, (ASMFC) promotes the better use of fisheries of the 15 Atlantic seaboard States through the development of a joint program for promotion and protection of fisheries and the prevention of physical waste of fisheries from any cause.

455. CHESAPEAKE RESEARCH CONSORTIUM: CRC

Chartered in 1972 by the State of Maryland, the Consortium includes the Smithsonian Institution's Chesapeake Bay Center for Environmental Studies, the University of Maryland, the Johns Hopkins University's Chesapeake Bay Institute, and the Virginia Institute of Marine Sciences.

456. COASTAL STATES ORGANIZATION: CSO

Established in 1970, CSO gathers, and disseminates information on marine affairs of interest to the 32 States bordering the oceans

or the Great Lakes; develops cooperative programs; and develops means whereby the States may be adequately represented in the formulation of plans at the Federal level.

457. COASTAL PLAINS REGIONAL COMMISSION: CPRC

Established in 1965 by Georgia, North Carolina, and South Carolina, CPRC was expanded in 1975 to include Florida and Virginia. It includes an Environmental Affairs Advisory Committee to advise on programs. In 1968 it established the Coastal Plains Center for Marine Development Services (CPCMDS).

458. COLUMBIA RIVER ESTUARY STUDY TASK FORCE: CREST

Established in 1975 and comprising representatives from city and county governments in Oregon and Washington, CREST has as its mission the preparation of a coordinated, comprehensive plan for the management of the estuary.

459. CONNECTICUT RIVER SALMON ASSOCIATION: CRSA

CRSA was incorporated in 1974 as an organization to manage salmon in the Connecticut River. It was instrumental in development of legislation to establish a Connecticut River Atlantic Salmon Commission. This legislation, first introduced in New Hampshire in 1977, has been passed by New Hampshire, Connecticut, and Vermont, but is still pending in Massachusetts.

460. GREAT LAKES COMMISSION: GLC

Established in 1955 by Great Lakes States' legislatures, GLC is a recommendatory and advisory agency for the eight Great Lakes States in regional water resources matters.

461. GULF STATES MARINE FISHERIES COMMISSION: GSMFC

A Federal-State commission established in 1949, GSMFC promotes a proper use of the fisheries common to the five Gulf coast States, all of whom are members of the Commission. In 1966, in cooperation with the Bureau of Commercial Fisheries, it began the cooperative Gulf of Mexico Estuarine Inventory (GMEI).

462. GULF UNIVERSITIES RESEARCH CORPORATION: GURC

A nonprofit research organization, GURC was founded in 1965 and comprises universities and research organizations from Florida to Texas. It is devoted to the development of the Gulf of Mexico as an important natural resource. Its major effort has been the Gulf Environmental Measurements Program (GEMP), a 10 year program. It also sponsored the Offshore Ecology Investigation (OEI) to satisfy the need of its offshore industry affiliates for data to determine if their explorations and activities adversely affect the environment.

463. MARINE SCIENCE CONSORTIUM: MSC

Located in Pennsylvania with members in Delaware, the District of Columbia, Maryland, and Virginia, MSC specializes in the ecology of Chesapeake and Chincoteague Bays. In 1973, it made a Sludge Acid Monitoring Survey (SAMS) of three waste disposal sites in the Atlantic Ocean.

464. MISSISSIPPI-ALABAMA SEA GRANT PROGRAM: MASGP

Nine institutions in Mississippi and Alabama compose the consortium, formerly called the University Marine Center (UMC), which promotes research, education, and advisory services.

465. NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION: NEIWPCC

Established in 1947, NEIWPCC is concerned with all bodies of water contiguous to or flowing through two or more New England States (all of which are members), including tidal waters that ebb and flow past State boundaries. Its functions include the consideration of interstate pollution control efforts, education and training, and public information.

466. NEW ENGLAND ESTUARINE RESEARCH SOCIETY: NEERS

467. NEW ENGLAND FISHERIES DEVELOPMENT PROGRAM: NEFDP

Sponsored by the New England Regional Commission (NERCOM), NEFDP includes the New England Fisheries Steering Committee (NEFSC), which serves as an ombudsman for the fishing industry.

468. PACIFIC MARINE FISHERIES COMMISSION: PMFC

Established in 1947, PMFC promotes the better use of fisheries of mutual concern to the Pacific coast States including Alaska.

469. SEA USE COUNCIL: SUC

A regional forum of United States and Canadian Federal, State, and Provincial agencies bordering the Northeast Pacific area, SUC's objective is to encourage the scientific and economic development of marine resources in the region. It includes a Marine Services Development Group that works closely with the National Weather Service's Seattle office in providing marine services such as sea ice briefings to navigators.

D. PRIVATE ORGANIZATIONS

470. AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS: AAPG

Founded in 1917, AAPG is concerned with the advancement of the science of geology as it relates to petroleum and natural gas. It promotes exploration for petroleum and natural gas, including exploration in the continental and outer continental shelf.

471. AMERICAN ASSOCIATION OF PORT AUTHORITIES: AAPA

Founded in 1912 to develop and encourage water-based transportation, AAPA is currently involved with the establishment of deep-water ports (DWP's).

472. AMERICAN ASSOCIATION OF ZOOLOGICAL PARKS AND AQUARIUMS: AAZPA

Organized in 1924 to promote the welfare of zoological parks and aquariums, AAZPA is also involved in the conservation of wildlife and preservation of endangered species, including those in the marine environment.

473. AMERICAN BUREAU OF SHIPPING: ABS

Founded in 1862, ABS is a nonprofit self-regulatory organization for maritime interests. It is concerned with standards for design and construction, and the periodic survey of ships and other structures to ensure their fitness. It maintains the American Bureau of Shipping Information Retrieval System (ABSIRS), which contains pertinent facts and characteristics about merchant vessels. In a recent reorganization, ABS established an Ocean Engineering Division to work with the development of offshore platforms and powerplants, and underwater vehicles and habitats.

474. AMERICAN CETACEAN SOCIETY: ACS
Founded in 1967 to protect marine mammals, especially whales, ACS is also concerned with the protection of all marine life.

475. AMERICAN CONGRESS ON SURVEYING AND MAPPING: ACSM
Founded in 1941 to promote the science of surveying and mapping, ACSM has added sections on marine surveying and mapping in recent years.

476. AMERICAN FISHERIES SOCIETY: AFS
A professional society organized in 1870 to promote the conservation, development, and wise use of commercial and recreational species, AFS includes a Committee on Marine and Estuarine Resources.

477. AMERICAN FISHERMAN'S RESEARCH FOUNDATION: AFRF

478. AMERICAN FISHERMAN'S SAFETY INCENTIVE PROGRAM: AFSIP
An outgrowth of the Alaska Sea Grant Program, AFSIP is an attempt by fishermen to develop their own safety standards.

479. AMERICAN GAS ASSOCIATION: AGA
Founded in 1919, AGA is concerned with all aspects of gas production and promotes research for exploration for gas resources, including those in the continental and outer continental shelves.

480. AMERICAN GEOLOGICAL INSTITUTE: AGI
Founded in 1948, AGI is a nonprofit federation of professional societies in geology and geophysics. It promotes training; publishes dictionaries, glossaries, a newsletter, and English translations of foreign literature; and coordinates activities of its member societies. It sponsors a Geological Reference File (GEOREF), a computer-readable data base of geoscience information.

481. AMERICAN GEOGRAPHIC SOCIETY: AGS
An independent, nonprofit research organization founded in 1852, AGS has fields of research that include oceanography. It publishes the "Serial Atlas of the Marine Environment" folios and the "Antarctic Map Folio."

482. AMERICAN GEOPHYSICAL UNION: AGU
Founded in 1919, AGU promotes the study of geophysics and assists in coordinating geophysical research. Of interest to marine scientists are its sections on hydrology, meteorology, oceanography, seismology, and volcanology. It represents the United States at the International Union of Geology and Geophysics (IUGG).

483. AMERICAN INSTITUTE OF BIOLOGICAL SCIENCES: AIBS
Organized in 1947, AIBS is a national organization for biology and biologists and includes sections on marine biology.

484. AMERICAN INSTITUTE OF FISHERY RESEARCH BIOLOGISTS: AIFRB
Founded in 1956.

485. AMERICAN INSTITUTE OF MERCHANT SHIPPING: AIMS
AIMS was founded in 1969.

486. AMERICAN INSTITUTE OF MINING, METALLURGICAL AND PETROLEUM ENGINEERS: AIME
AIME is a professional society established in 1905 as the American Institute of Mining Engineers. Its acronym has remained the

same though its name was changed to meet its expanding role. In recent years it has become increasingly involved in offshore mining, exploration, and technology.

487. AMERICAN INSTITUTE OF NAUTICAL ARCHEOLOGY: AINA

488. AMERICAN LITTORAL SOCIETY: ALS
Organized in 1961, ALS promotes studies of aquatic life by observing marine animals, promotes public awareness of aquatic life, and conserves estuaries.

489. AMERICAN MALACOLOGICAL UNION: AMU
Founded in 1931, AMU is an organization of professional scientists specializing in the study of mollusks and of amateur collectors of shells.

490. AMERICAN MARITIME ASSOCIATION: AMA
AMA was founded in 1961.

491. AMERICAN METEOROLOGICAL SOCIETY: AMS
Founded in 1919, AMS is the leading professional organization for meteorologists in the United States. It is active in marine meteorology and concerned with physical oceanography. Its publication Meteorological and Geoastrophysical Abstracts (M&GA) regularly includes a section on physical oceanography. Among its journal publications is the Journal of Physical Oceanography.

492. AMERICAN OCEANIC ORGANIZATION: AOO
Organized in 1968 to "informally stimulate the exchange of information between the U.S. Government and the oceanic community," AOO organized in 1978 the first National Oceans Week, which was recognized by the President and the Congress.

493. AMERICAN PETROLEUM INSTITUTE: API
Founded in 1919 as a trade association, API promotes the interests of the petroleum industries, represents them in contracts with the Government, sponsors research on environmental protection and the prevention and control of oil pollution, and sets standards and performance controls for the industry. It sponsors a computerized Central Abstracting and Indexing Service (CAIS).

494. AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION: ASBPA
Organized in 1926, ASBPA coordinates special interest groups in the preservation and restoration of beaches and shorefronts.

495. AMERICAN SOCIETY FOR TESTING AND MATERIALS: ASTM
Founded in 1898, ASTM includes among its activities the study of water, water quality, and materials in water. Its subcommittee on Biology Monitoring deals with the development of biological methods for assessment of water and its subcommittee on Saline Water prepares standards for seawater, brackish water, and brines for sampling, analysis, and reporting results of analysis. It recently (1976) formed a new Committee on Spill Control Systems to test and evaluate methods proposed for the control of oil spills and other floating substances.

496. AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS: ASBC
ASBC was founded in 1906.

497. AMERICAN SOCIETY OF CIVIL ENGINEERS: ASCE
Founded in 1852, ASCE includes a Waters, Harbors, and Coastal Engineering Division and a Technical Council on Ocean Engineering which promotes the advancement of deep ocean civil engineering.

498. AMERICAN SOCIETY OF ICHTHYOLOGISTS AND HERPETOLOGISTS: ASIH
Founded in 1913, ASIH is a professional organization for the advancement of the study of fishes, amphibians, and reptiles.

499. AMERICAN SOCIETY OF INTERNATIONAL LAW: ASIL
Organized in 1906 to promote international relations on the basis of law and justice, ASIL is involved in the Law of the Sea Conferences and other aspects of maritime law.

500. AMERICAN SOCIETY OF LIMNOLOGY AND OCEANOGRAPHY: ASLO
Founded in 1936 as the Limnological Society of American, ASLO assumed its present name in 1949. It promotes and publishes research in aquatic sciences through meetings, symposia, and the publication of the journal Limnology and Oceanography.

501. AMERICAN SOCIETY OF MAMMALOGISTS: ASM
Organized in 1919, ASM is concerned with research, education, and conservation of mammals and all phases of mammalogy. It has a Committee on Marine Mammals and is especially concerned with those threatened with extinction.

502. AMERICAN SOCIETY OF MECHANICAL ENGINEERS: ASME
ASME was founded in 1880.

503. AMERICAN SOCIETY FOR MICROBIOLOGY: ASM
Formerly the Society of American Bacteriologists, ASM was established in 1899.

504. AMERICAN SOCIETY OF NAVAL ENGINEERS: ASNE
ASNE was founded in 1888.

505. AMERICAN SOCIETY OF PHOTOGRAMMETRY: ASP
ASP was founded in 1934. One of its objectives is to promote the use of aerial photography and remote sensing for studying the environment.

506. AMERICAN TUNABOAT ASSOCIATION: ATA
ATA was founded in 1923.

507. AMERICAN WATER RESOURCES ASSOCIATION: AWRA
Founded in 1964, AWRA is a nonprofit scientific organization to advance water resources research. it is responsible for the compilation of Water Resources Abstracts.

508. ASSOCIATION OF AMERICAN SHIP OWNERS: AASO
Now inactive.

509. ASSOCIATION OF SEA GRANT PROGRAM INSTITUTES: ASGPI

510. ATLANTIC ESTUARINE RESEARCH SOCIETY: AERS
A nonprofit society formed in 1949 for educational purposes, AERS has the objective of promoting informal discussion and exchange of ideas on estuaries, especially those in the Chesapeake Bay-Carolina area. It is a member of the New England Estuarine Research Society (NEERS).

511. ATLANTIC OFFSHORE FISH AND LOBSTER ASSOCIATION: AOFLA
AOFLA comprises about 60 commercial fishery companies.

512. BALTIMORE MARINE EXCHANGE: BME

513. BATELLE MEMORIAL INSTITUTE: BMI
A research organization, BMI has special interests in the marine environment and supports several marine science laboratories: Florida Marine Research Laboratories, Wm. Clapp Laboratories in Massachusetts, the Pacific Northwest Laboratories (PNWL) in Washington, the Long Beach Ocean-Engineering Facility, California, and laboratories in Ohio. Its Columbus, Ohio, laboratories support several information centers of interest: analytical Methodology Information Center (AMIC) established in 1970 and containing references to methods for identifying pollutants, effects of water pollution, quality control of pollutants, and analyses of water quality; Diver Equipment Information Center (DEIC); Energy Information Center (EIC); and the Environmental Information Analysis Center (EIAC), established in 1966 and concerned with the effects of a sea-level canal at the Isthmus of Panama and with ecology of the Aleutian Islands. Its Pacific Northwest Laboratory supports the Oil and Hazardous Materials Technical Assistance Data System (OHMTADS), which includes information on oil spills and their effects.

514. BERNICE P. BISHOP MUSEUM: BPBM
Located in Hawaii, BPBM takes an active interest in the Pacific area and operates the Pacific Science Information Center (PSIC).

515. BIOLOGICAL SCIENCES INFORMATION SERVICE: BIOSIS
BIOSIS has been publishing Biological Abstracts since 1926. It is a clearinghouse for the entire field of life sciences and is especially concerned with information on environmental pollutants.

516. BROOKHAVEN NATIONAL LABORATORY: BNL
An independent nonprofit research organization, BNL was established in 1947 and is operated by Associated Universities, Inc., a consortium of nine northeastern universities. Its fields of interest are oriented towards nuclear and related sciences. It was responsible for the Coastal Shelf Oceanography Program (CSOP) conducted off New York in the bight area in 1974-75. Included in CSOP were the Coastal Boundary Layer Transect (COBALT), the Shelf Exchange Processes (SEEP), and the Surface Mixed Layer Experiment (SMILE) subprograms.

517. CALIFORNIA ASSOCIATION OF PORT AUTHORITIES: CAPA

518. CHESAPEAKE BAY FOUNDATION: CBF
CBF was organized in 1965 to protect the bay.

519. CHESAPEAKE WATER POLLUTION CONTROL ASSOCIATION: CWPCA

520. CHEVRON OIL FIELD RESEARCH CO.: COFRC
COFRC maintains a Technical Information Center (TIC) which includes information on oceanography and on oil pollution and its prevention in the marine environment. It is also responsible for research on wind, waves, and other phenomena that affect offshore structures.

521. COASTAL ZONE MANAGEMENT INSTITUTION: CZMI
Organized in 1973, CZMI comprises professionals involved with the coastal zone. It acts as a clearinghouse for information and promotes research amd education in the field.

522. COMMITTEE ON THE SALMON EMERGENCY: CSE
Formed in 1970, CSE is concerned with protection of salmon on the high seas.

523. COUSTEAU SOCIETY: CS
Organized in 1974 to promote research in the marine area, is especially concerned with combating pollution and with reversing the decline in marine resources.

524. EASTERN PACIFIC OCEANOGRAPHIC CONFERENCE: EPOC
A loosely organized group of oceanographers who have been meeting annually since 1954. While basically interested in the Eastern Pacific, their interests are sometimes worldwide. EPOC has no official status, but many of its recommendations have been adopted and implemented, including its recommendation to establish a national center for oceanographic data in the United States.

525. ECOLOGY COUNCIL OF AMERICA: ECA

526. ECOLOGICAL SOCIETY OF AMERICA: ESA
A professional society organized in 1915, ESA promotes the study of organisms in relation to their environment.

527. ENVIRONMENTAL DEFENSE FUND: EDF
EDF is concerned with protection of porpoises.

528. ESTUARINE AND BRACKISH WATER SCIENCES ASSOCIATION: EBSA

529. ESTUARINE RESEARCH FEDERATION: ERF
ERF was established in 1969.

530. FLORIDA OCEAN SCIENCES INSTITUTE: FOSI
An independent, nonprofit research and educational organization, FOSI is especially concerned with ocean engineering and erosion control.

531. FOUNDATION FOR OCEANIC RESEARCH: FOR

532. GEOLOGICAL SOCIETY OF AMERICA: GSA
Founded in 1888 to promote scientific research in geology.

533. GEOPHYSICAL SCIENCES ASSOCIATION: GSA

534. GLOBAL MARINE INCORPORATED: GMI

535. GULF COAST ASSOCIATION OF GEOLOGICAL SOCIETIES: GCAGS
Founded in 1950 to promote scientific research for the Gulf Coast area, GCAGS is a member of the American Association of Petroleum Geologists and is concerned with offshore explorations for oil and gas.

536. GULF COAST FISHERMAN'S ENVIRONMENTAL DEFENSE FUND: GCFEDF
GCFEDF was established to save Flower Garden Reefs from overuse.

537. GULF ESTUARINE RESEARCH SOCIETY: GERS
Organized in 1973.

538. INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS: IEEE
Organized in 1963 by a merger of the American Institute of Electrical Engineers and the Institute of Radio Engineers, IEEE includes

an Ocean Coordinating Committee (OCC) and for a number of years has been a cosponsor of the Marine Technology Society's annual meeting.

539. INSTITUTE OF ENVIRONMENTAL SCIENCES: IES
A professional society, IES is dedicated to the improvement and protection of the environment. It includes a Committee on Marine Environmental Science.

540. INSTRUMENT SOCIETY OF AMERICA: ISA
Founded in 1945, ISA includes a Marine Science Division (MASID) concerned with the development of instruments for use in the marine environment.

541. INTERNATIONAL NICKEL COMPAMY: INCO
INCO operates the Francis L. LaQue Corrosion Laboratory (FLLCL) at Wrightsville, N.C., where studies of marine corrosion are made. Besides studies of marine corrosion, FLLCL studies desalination methods, seawater, and marine materials and engineering principles. INCO holds the yearly Sea Horse Institute at Wrightsville Beach.

542. MARINA ASSOCIATION OF AMERICA: MAA
Founded in 1978, MAA has had organizational help from Sea Grant personnel at Texas A&M University.

543. MARINE BIOLOGICAL LABORATORY: MBL
Located at Woods Hole, Mass., MBL is an independent biological laboratory incorporated in 1888 as a laboratory or station for scientific study and investigation and a school for instruction in biology and natural history. It publishes the bimonthly Biological Bulletin.

544. MARINE INDUSTRIES ASSOCIATION: MIA

545. MARINE PROTEIN INDUSTRIES, INC.: MPI

546. MARINE RESOURCES DEVELOPMENT FOUNDATION: MRDF

547. MARINE TECHNOLOGY SOCIETY: MTS
A nonprofit organization for persons with a professional interest in the marine field, MTS was founded in 1963. In 1971 it absorbed the American Society for Oceanography (ASO), formed in 1965. MTS includes 21 committees, each specializing in a separate field. It comprises many local sections throughout the United States and Canada. The Los Angeles regional section is identified as MTS/LARS, and the Southern New England section as SNEMTS. The several sections in the Pacific region form the Pacific Rim Alliance (PACRIM).

548. MOTE MARINE LABORATORY: MML
Established originally as the Cape Haze Marine Laboratory, MML specializes in shark research, estuarine ecology, and marine biology.

549. NATIONAL ASSOCIATION OF MARINE SURVEYORS: NAMS
Founded in 1960.

550. NATIONAL ASSOCIATION OF STATE ENVIRONMENTAL PROGRAMS AGENCIES: NASPA

551. NATIONAL ASSOCIATION OF UNDERWATER INSTRUCTORS: NAUI
Founded in 1960, to encourage training and education in safe water activities.

552. NATIONAL CANNERS ASSOCIATION: NCA
Formed in 1907, it has sections on fisheries and promotes conservation and protection of water resources.

553. NATIONAL COALITION FOR MARINE CONSERVATION: NCMC
A nonprofit organization founded in 1973 to protect the marine environment and its resources, especially in relation to game fish.

554. NATIONAL FEDERATION OF FISHERMEN: NFF
Founded in 1969, on the West Coast, NFF became national in 1973. Its prime function is to represent local fishermen in policy and legislative actions.

555. NATIONAL FISH MEAL AND OIL ASSOCIATION: NFMOA
Established in 1959, NFMOA is concerned with the conservation of fishery resources and is a member of the National Ocean Industries Association.

556. NATIONAL FISHERIES INSTITUTE: NFI
A trade association established in 1945, NFI comprises companies that produce, process, and distribute fish and seafood.

557. NATIONAL MARINE EDUCATION ASSOCIATION: NMEA
Organized in 1976, NMEA promotes interaction among members, provides access to and dissemination of educational materials, and provides information and recommendations on marine educational matters.

558. NATIONAL MARITIME UNION: NMU
Established in 1937.

559. NATIONAL OCEAN INDUSTRIES ASSOCIATION: NOIA
A trade association established in 1966 as the National Oceanographic Association (NOA), its name was first changed to National Oceanography Association in 1970 and to its present name in 1972. It serves as a legislative and administrative spokesman for the nation's offshore and ocean-oriented industries. Its annual meetings are known as "OCEANS."

560. NATIONAL OCEANOGRAPHIC FOUNDATION: NOF

561. NATIONAL SECURITY INDUSTRIAL ASSOCIATION: NSIA
Founded in 1944, NSIA has a membership that consists of educational and technical organizations, and industrial representatives who are concerned with developments in the defense industry and who counsel the Department of Defense. Among its specialty committees is an Antisubmarine Warfare Advisory Committee (ASWAC). An Ocean Science Technology Advisory Committee (OSTAC) was dropped in 1976. OSTAC'S Subcommittee on Instrumentation and Technology was transferred to the ASWAC, and its Petroleum Subcommittee was transferred to the Research and Engineering Committee.

562. NATIONAL SHELLFISH ASSOCIATION: NSA
Established in 1909 as the National Association of Shellfish Commissions, NSA was renamed in 1930. It encourages research, gathers data, and promotes conservation.

563. NATIONAL SHIPPING AUTHORITY: NSA

564. NATIONAL WETLAND TECHNICAL COUNCIL: NWTC

565. NATIONAL WILDLIFE DEFENSE COUNCIL: NWDF

566. NATIONAL WILDLIFE FEDERATION: NWF
Organized in 1936, NWF is a nonprofit conservation/education organization dedicated to the wise use and management of natural resources. It is especially concerned with ocean dumping practices in the offshore areas.

567. NEW ENGLAND MARINE INDUSTRIES COUNCIL: NEMIC
Established in 1974, NEMIC provides a forum for fishermen and oil company representatives to meet and work out solutions to problems encountered during the development of oil resources on the continental shelf.

568. NEW ENGLAND OIL COALITION: NEOC

569. NORTH AMERICAN SALMON COUNCIL: NASC

570. NORTH AMERICAN SOCIETY FOR OCEANIC HISTORY: NASOH
Established in 1975, NASOH is affiliated with the International Commission on Maritime History (ICMH).

571. NORTHWEST PACIFIC OCEANOGRAPHERS: NWPO

572. OCEAN MINING ASSOCIATES: OMA
OMA is a consortium of industries involved in deep ocean mining.

573. OCEANIC INDUSTRIES ASSOCIATION: OIA
A trade group incorporated in 1966; OIA ceased effective operations about 1972.

574. OCEANIC LIBRARY AND INFORMATION CENTER: OLIC
Established in 1964, OLIC was responsible for the publication of Oceanic Abstracts until 1970 when this responsibility was taken over by Pollution Abstracts, which was later superseded by Data Courier, Inc.

575. OCEANIC SOCIETY: OS
Established in 1969, OS sponsors research, education, and conservation programs, and publishes a popular magazine called Oceans.

576. OFFSHORE ENGINEERING CONFERENCE: OECON
Annual conference has been held by OECON since 1966.

577. OIL SPILL CONTROL ASSOCIATION OF AMERICA: OSCAA
A trade association organized in 1973, OSCAA sets standards, promotes control measure, and serves as a liaison between its members and pertinent Federal agencies.

578. PACIFIC SEABIRD GROUP: PSG
Organized in 1972, PSG has members that take censuses of seabirds, work with preservation of birds in event of oil spills or other disasters, and make pelagic observations.

579. PAN PACIFIC INSTITUTE OF OCEAN SCIENCES: PANPAC
A nonprofit institution, PANPAC was incorporated in Hawaii in 1972.

580. POLAR RESEARCH LABORATORIES: PRL
A research group, PRL has designed data collecting stations for use in polar research. Among these is the Manned-Unmanned Environmental Research Station (MUMMERS) designed for use on Fletchers Ice Island in the Arctic.

581. SEA EDUCATION ASSOCIATION: SEA
SEA offers ocean research opportunities at sea and cooperates with the U.S. Government in its programs to advance marine education.

582. SHELLFISH INSTITUTE OF NORTH AMERICA: SINA
Organized in 1904 and originally called the Oyster Institute of North America, SINA promotes the protection of shellfish areas and sponsors their growth.

583. SHIPBUILDING COUNCIL OF AMERICA: SCA
Formed in 1921, SCA includes among its concerns the control of waste discharge from ships and improvements in the design of ports.

584. SIERRA CLUB AND FRIENDS OF THE EARTH: SC&FE
Founded in 1892 to restore the quality of the natural environment and promote the integrity of ecosystems, SC&FE is a vocal lobbying group.

585. SOCIETY OF ECONOMIC PALEONTOLOGISTS AND MINERALOGISTS: SEPM
Established in 1927 and affiliated with the American Association of Petroleum Geologists, SEPM promotes research in coastal sedimentology, oceanic plankton, and deep marine sediments.

586. SOCIETY OF EXPLORATION GEOPHYSICISTS: SEG
Established in 1930, SEG promotes research and is concerned with seismic explorations of the continental and outer continental shelves.

587. SPORT FISHING INSTITUTE: SFI
Organized in 1949, SFI promotes a program of ecological research, fish conservation education, and aquatic sciences. The Sport Fishing Research Foundation (SFRF), an affiliate of SFI formed in 1967, ceased

588. STANFORD RESEARCH INSTITUTE: SRI
An independent nonprofit research organization established in 1946 and formerly affiliated with Stanford University, SRI performs various research activities under contract to the U.S. Government and in recent years has been participating in the U.S. MODE and POLYMODE efforts.

589. THE COASTAL SOCIETY: TCS
A nonprofit professional society, TCS comprises individuals and organizations concerned with the conservation and proper management of the coastal zone.

590. TUNA RESEARCH FOUNDATION: TRF
Formerly the California Fish Canners Association, TRF was founded in 1932.

591. UNDER SEAS EQUIPMENT MANUFACTURERS ASSOCIATION: USEMA
A trade group formed in 1966.

592. UNDERSEA MEDICAL SOCIETY: UMS
UMS members are concerned with the health and safety of divers.

593. WATER POLLUTION CONTROL FEDERATION: WPCF
Organized in 1928, WPCF advances knowledge in water pollution control.

594. ALGERIA

The Centre de Recherche Oceanographique et des Peches (CROP) is responsible for Algeria's marine science programs, most of which relate to marine biology, fisheries, and protection of its coastal waters.

595. ARGENTINA

The Centro Argentino de Datos Oceanograficos (CEADO), Argentina's national oceanographic data center, is administered by the Consejo Nacional de Investigaciones Cientificas y Tecnicas (CONICET), Argentina's national council for scientific and technical investigations. CEADO receives technical and functional support from the Servicio Hidrografia Naval (SHN), Argentina's hydrographic and naval service. CEADO was organized in 1974, but its antecedents date back to 1965 when the SHN was the designated national agency (DNA) responsible for the exchange of oceanographic data. In 1966 SHN established a Division Central de Datos, which became the Centro Nacional de Datos Oceanograficos (CDNO) until it was superseded by CEADO.

Other agencies involved in marine science include the Servicio Nacional de Pesca (SNP), the Centro de Investigacion de Biologia Marina (CIBIMA), the Instituto Antarctico (IAA), the Instituto Argentino de Oceanografia (IADO), the Instituto de Biologia Marina (IBM), and the Museo Argentino de Ciencias Naturales.

596. AUSTRALIA

The Hydrographic Office of the Royal Australian Navy (RAN) is responsible for the Australian Oceanographic Data Center (AODC), which was established in 1964. RAN also makes oceanographic and hydrographic surveys and collects data on tides and currents. It supports the Royal Australian Naval Research Laboratory (RANRL) and the Royal Australian Naval Environmental Laboratory (RANEL).

The Commonwealth Scientific and Industrial Research Organization (CSIRO) includes a Division of Fisheries and Oceanography, which is active in coastal surveys. The Department of Natural Development includes a Bureau of Mineral Resources, Geology and Geophysics (BMRGG), which makes many marine geological and geophysical surveys.

Other acronyms and abbreviations are AIMS--the Australian Institute of Marine Sciences, which specializes in studies of the Great Barrier Reef, the Coral Sea, and the coast of North Queensland; AAMH--the Australian Association of Maritime History, established in 1978; AMSA--the Australian Marine Sciences Association; ANARE--the Australian National Antarctic Research Expedition; ASFB--the Australian Society for Fish Biology; ASL--the Australian Society for Limnology; ANZAAS--the Australian-New Zealand Association for the Advancement of Science, and HLIO--the Horace Lamb Institute of Oceanography.

597. BARBADOS

Its Department of the Environment (DOE), established in 1977, is responsible for handling oceanographic matters.

598. BELGIUM

The Service Hydrographique de la Cote (SHC) is responsible for most of Belgium's oceanographic activities.

599. BRAZIL

The Marinha do Brasil or Brazilian Navy includes the Diretoria de Hidrografia e Navegacao (DHN) and the Instituto de Pesquisas de Marinha (IPqM). DHN acts as the designated national agency for the exchange of oceanographic data.

Other government agencies of interest are the Secretaria Agricultura, which includes the Instituto de Pesquisas (IP) and the Departmento Nacional de Producao Mineral (DNPM) of the Ministerio de Minas e Energia (MME).

Several universities in Brazil have active programs in marine science and participate in programs of research. Included are the Universidade de Sao Paulo, which has an Instituto Oceanografico (IOUSP); the Universidade Federal Rio Grande do Sul (UFRGS), which includes the Centro de Estudios Costeiras e Oceanicas (CECO); the Universidade Federal do Rio de Janeiro (UFRJ), which includes the Laboratorio de Geologia Marinha (LAGEMAR); the Universidade Federal do Ceara (UFC), which includes the Laboratoria de Ciencias do Mar (LACIMAR); the Universidade Federal de Pernambuco (UFP), which includes the Departmento de Oceanografia; and the Fundacao Universidade do Rio Grande (FURG), which includes the Base Oceanografia Atlantica (BOA).

Brazilian scientists are involved in the International Decade of Ocean Exploration's Project REMAC--Reconhecimento da Margem Continental Brasileira. Another cooperative program involving several Brazilian agencies is GEOMAR--Programa Plurianual de Geologia e Geofisica Marinha. Petroleo Brasileiro (PETROBRAS) sponsors research in the coastal areas in search of petroleum resources.

600. BURMA

The Naval Hydrographic Depot (NHD) of the Burmese Navy and the Burma Fisheries Department (BFD) are responsible for marine science activities in Burma.

601. CAMEROON

The Office National des Ports (ONP) includes an office responsible for hydrographic and tidal surveys. The Direction de la Meteorologie Nationale (DMN) has some marine meteorological responsibilities.

602. CANADA, Government Agencies

A Canadian Committee on Oceanography (CCO) is responsible for Canada's overall policy regarding marine matters and for coordinating marine activities among the several Government agencies responsible for marine activities.

The Department of the Environment (DOE), also referred to as Environment Canada, was created in 1971 to amalgamate federal responsibilities for the protection, preservation and enhancement of environmental quality and related renewable resources. DOE includes two main components: the Fisheries and Marine Service (FMS) and Environmental Services (ES). It sponsors two facilities for oceanographic research: the Bedford Institute of Oceanography (BIO) established in 1962 on the coast and which is cosponsored by the Department of Energy, Mines, and Resources (DEMR), and the Institute of Ocean Sciences (IOS) at Patricia Bay, British Columbia.

Most of the activities of FMS are divided into two main units: Fishery Management and Ocean and Aquatic Sciences (OAS). The Fishery

Management program succeeded to the functions of the former Fisheries Research Board (FRB), which originated in the 1880's and was abolished with the creation of FMS.

In 1977 Canada established an Exclusive Economic Zone (EEZ) which is administered by FMS. As a part of the program of administering regulations relating to fishing, FMS developed an automated Foreign Fishing Vessel Licensing and Surveillance Hiearchical Information System (FLASH) to monitor foreign vessels operating in its EEZ. FLASH also keeps track of quotas assigned to each country and the actual catch made by each. A Satellite Surveillance Program (SURSAT) is being developed to monitor the EEZ. SURSAT will also monitor oil and gas activities in the coastal zones and in the Arctic Development Zone. In addition to regulating fishing, Canada's EEZ program calls for the regulation of pollution in accordance with its Arctic Waters Pollution Prevention Act of 1970 (AWPPA), the Canadian Shipping Act (CSA) as amended in 1970 to include prevention of pollution by ships, and its Ocean Dumping Control Act (ODCA) of 1975.

OAS succeeded to the functions of the former Marine Sciences Directorate (MSD). It operates the Atlantic Oceanographic Laboratory (AOL) at the Bedford Institute and conducts programs at the Institute of Ocean Sciences, at the Canada Centre for Inland Waters (CCIW), and at many other laboratories throughout Canada. In addition to sponsoring oceanographic research, OAS is responsible for the operations of the Marine Environmental Data Service (MEDS), which inherited the functions of the former Canadian Oceanographic Data Centre (CODC), the Tides and Water Levels Section of the Canadian Hydrographic Service (CHS), and the Wave Climate Study (WCS). OAS is responsible for the operations of the Canadian Hydrographic Service (CHS).

Environmental Services (ES) includes the Atmospheric Environmental Service (AES) and the Environmental Management Service (EMS). AES is Canada's national weather service and operates the Canadian Meteorological Center (CMC). Its activities include marine meteorology and ice observations, reconnaissance, and forecasting.

Organizations within the Environmental Management Service that have marine interests are the Inland Waterways Directorate (IWD), the Canadian Wildlife Service (CWS), and the Environmental Protection Service (EPS). IWD operates the Canada Centre for Inland Waters (CCIW) and the Water Resources Document Reference Center (WATDOC). CCIW is the national water research and survey institute and performs studies in the Great Lakes and in the Canadian Arctic; makes surveys of shoreline erosion; and is preparing a coastal zone atlas for Canada. WATDOC is responsible for the development and maintenance of a computerized data base about Canada's water resources.

EPS is responsible for dealing with problems of the Canadian environment and its protection, including water pollution control and ecological protection. It maintains a Centre of Spill Technology (COST) for the testing, evaluation, and development of spill countermeasures and cleanup activities. It implements two computerized systems: the National Emergency Equipment Locator System (NEELS) and the National Analysis of Trends in Emergency Systems (NATES).

Other Government agencies with marine science interests include the Geological Survey of Canada (GSC), which is in the Department of Energy, Mines, and Resources (DEMR) and is responsible for the Canadian Centre for Geoscience Data (CCGD); the Department of Indian Affairs and Northern Development (DIAND) handles environmental and ecological activities in the Canadian Arctic; and the Department of National Defense (DND), which includes the Defense Research Board (DRB), the Defense Research Establishment Atlantic (DREA), ...Ottawa

(DREO), ...and Pacific (DREP), and operates the Meteorology and Oceanographic Centres (METOC) at British Columbia and Halifax.

The National Research Council of Canada (NRCC) sponsors marine research and operates the Atlantic Regional Laboratory (ARL).

603. CANADA, Universities

The University of British Columbia includes an Institute of Oceanography (UBCIO); Dalhousie University has an Institute of Ocean Sciences (DUIOS); the Memorial University of Newfoundland (MUN) specializes in cold ocean research and sponsors the Centre for Cold Ocean Resources Engineering (C-CORE), a Marine Sciences Research Laboratory (MSRL), and the Canadian Maritime History Group (CMHG); McGill University includes a Marine Research Centre (MRC) and sponsors the Bellairs Research Institute (BRI) in the West Indies, which specializes in tropical marine ecology; and the Universite du Quebec, which includes a Section d'Oceanographie (SOUQAR) at Rimouski. The Huntsman Marine Laboratory (HML) at St. Andrews, New Brunswick, serves a consortium of about 20 eastern universities.

604. CANADA, Other Organizations

The Atlantic Salmon Association (ASA) and the North American Salmon Association (NASA), both formed in 1948, are concerned with the restoration of the Atlantic salmon. The Aquaculture Association of Nova Scotia (AANS) was formed in 1976 to provide a means by which members can exchange information on aquaculture. The Canadian Hydrographers Association (CHA) is an active organization. PACE is the acronym for the Petroleum Association for Conservation of the Environment.

The Newfoundland Oceans Research and Development Co. (NORDCO) was formed in 1975 to cooperate with Canadian and United States Companies working on research projects related to the search for offshore deposits of oil and gas. One such study is the Eastern Arctic Marine Environmental Studies (EAMES).

The Province of Ontario established the Ontario Water Resources Commission (OWRC) to monitor pollution and protect the resources of the Great Lakes.

605. CHILE

The Comite Oceanografico Nacional (CONA) was created in 1971 and includes Government and nongovernment members who serve to coordinate marine science activities in Chile. Its major program, a continuing oceanographic survey of Chile's coastal waters, is identified as MARCHILE.

The Centro Nacional de Datos Oceanograficos de Chile (CENDOC) is a part of the Instituto Hidrografico de la Armade (IHA), formerly the Departamento de Navegacion e Hidrografia. IHA is also responsible for oceanographic surveys and data relating to tides and currents. Marine meteorology is a responsiblility of the Servicio Meteorologico de la Armada (SMA). Oceanographic and related marine biology surveys in connection with fishery investigations are made by the Instituto de Fomento Pesquera (IFOP). Other active agencies are the Division de Pesca (DDP) of the Servicio Agricola y Ganaders and the Instituto Antartico Chileno (IAC).

Several Chilean universities have active marine science programs: the Universidad Catolico de Valparaiso includes a Centro de Investigaciones del Mar (CIMAR); the Universidad de Chile has a Departmento de Oceanologia; the Universidad de Concepcion has a Departamento de Biologia Marina; and the Universidad del Norte a Centro de Investigaciones Submarinas and a Departamento de Pesquerias.

606. CHINA, PEOPLE'S REPUBLIC OF

The National Bureau of Oceanography (NBO), which was established in 1964-65 and is responsible for work in all disciplines of oceanography, is the leading marine science organization of the People's Republic of China (PRC). Its programs are carried out by three sub-bureaus, those for the South China, East China, and North China (Yellow) Seas, which operate a network of tide stations and buoys, provide ships and logistical support, and conduct other operational programs; three research institutes, the First Institute in Qingdao (Tsingtao), the Second Institute in Hangchow, and the Third Institute in Ximen (Amoy); an Institute of Marine Scientific and Technological Information; and an Institute for Environmental Protection.

The Bureau of Aquatic Products, the national organization responsible for both marine and freshwater fisheries, collects physical as well as chemical and biological data. Units under its direction include the South China Sea, East China Sea, and Yellow Sea Fisheries Research Institutes and various institutes and laboratories in inland and coastal provinces.

Other government ministries and bureaus involved in marine science are the Ministry of Petroleum, which has a strong marine geology and geophysics component and which operates the Institute for Petroleum Geology and Institutes for Po Hai Bay and the Yellow Sea; the Ministry of Transportation, which includes the Academy of Water Transportation and Development, the Academy of Waterway Engineering, and Nanjing (Nanking) Water Research Academy, and the Institute of Ship Research; the Ministry of Chemistry, which supports marine chemistry research and observational programs; the PRC Navy, which operates an Institute for Ocean Science Research; and the Ministry of Education, which has overall responsibility for the college and university system.

The Academia Sinica, the academy of sciences of the People's Republic of China, operates research institutions in all areas of science. For the marine sciences these include the Institute of Oceanography, Qingdao (Tsingtao) and the South China Sea Institute of Oceanology.

A number of colleges and universities have curricula and research programs in the marine sciences. The principal oceanographic institution is the Shandung University School of Oceanography in Qingdao (Tsingtao). The Estuarine and Coastal Institute of Shanghai Normal University is another typical institution.

Facilities related to marine science are also operated by coastal provinces. An example is the Shanghai Institute of Computer Technology, which has performed oceanographic calculations such as tidal predictions for harbor construction, computation of geostrophic currents, and numerical modeling of estuaries.

607. COLOMBIA

The Comision Colombiana de Oceanografia (COO) coordinates marine research in Colombia, most of which is by the Navy, which includes a Centro de Investigaciones Oceanograficas y Hidrograficas (CIOH) established in 1975. The Navy is also responsible for the Centro Colombiano de Datos Oceanograficos (CECOLDO), Colombia's national oceanographic data center.

608. COSTA RICA

Responsibilities for hydrographic and related marine science activities are delegated to the Direccion General de Obras Portuarias (DGOP).

609. CUBA

The Instituto Cubano de Hidrografia (ICH), Instituto Nacional de Pesca (INP), and the Instituto de Oceanologia of the Academia de Ciencias de Cuba are responsible for marine science activities in Cuba.

610. DENMARK

The Danske Meteorologiske Institut (DMI) has been making meteorological and oceanographical observations at Danish lightships and other stations since 1897; observations of sea-surface temperature of the northern Atlantic since 1895; and studies of ice conditions in Greenland waters since 1890. The Farvandsdirektoratet Nautisk Afdeling (FNAF) or Royal Danish Administration of Navigation and Hydrography is responsible for hydrographic surveys. Its Geological Survey and Danish Institute for Fisheries and Marine Research are also involved in marine research activities. Its Universities of Copenhagen, Aarhus, and Odense include programs in marine sciences.

Denmark is the home of the International Council for the Exploration of the Sea (ICES), established in 1902; ICES serves as Denmark's oceanographic data depository.

Marine activities are the responsibility of the Departmento Hidrografico Marina de Guerra (DHMG) and the Servicio Meteorologico Nacional (SMN). The Instituto Cartografico Universitario (ICU) is responsible for tidal studies, and the Universidad Autonoma de Santo Domingo has marine science programs.

612. ECUADOR

The Instituto Oceanografico de la Armada (INOCAR) and the Instituto Nacional de Pesca del Ecuador (INPE) share responsibilities for marine science activities with INOCAR specializing in geophysical research and INPE in physical oceanography and marine biology.

613. EGYPT

Egypt is currently establishing a National oceanographic data center (ENODC). Its hydrographic department or Idarat al Misaha al Baharia is responsible for hydrographic and related physical oceanographic surveys.

614. EL SALVADOR

The Instituto Geografico Nacional (IGN) includes a cartographic office responsible for hydrographic and tidal surveys.

615. FIJI

A hydrographic unit in the Fiji Marine Department (FMD) is responsible for hydrographic and tidal surveys.

616. FINLAND

Finland's Merentulkimuslaitos or Institute of Marine Research (IMR) is the primary oceanographic institute sponsored by the Government.

617. FRANCE

The Conseil de la Recherche Oceanologique (CRO) was established in 1976 to coordinate civilian oceanographic programs. The Groupe

Interministeriel de Coordination de l'Action en Mer des Administrations (GICAMA) operates at the top level of the Government to coordinate efforts of the individual agencies.

The principal civilian agency concerned with oceanography is the Centre National pour l'Exploitation des Oceans (CNEXO), established in 1967, which replaced an earlier organization referred to as COMEXO. COMEXO, established in 1961 by the Delegation Generale de la Recherche Scientifique et Technique, was politically oriented whereas CNEXO is functionally oriented.

CNEXO established several centers to perform its mission: the Centre Oceanologique de Bretagne (COB); the Base Oceanologique de Mediterranee (BOM): and the Centre Oceanologique du Pacifique (COP). COB, established in 1968, is responsible for the Bureau National des Donnees Oceaniques (BNDO), the French national oceanographic data center, established in 1972. BNDO is also France's national center for oceanographic documentation and the Oceanographic Sub-Program Data Center (OSDC) for the GARP Atlantic Tropical Experiment (GATE). BNDO sponsors the Signalement et Archivage des Information Courantometriques (SAIC) program. COB also sponsors the Centre d'Etudes, de Documentation, de Recherches, et d'Experimentation (CEDRE), which is involved in combatting oil pollution.

BOM is responsible for the Service Technique des Equipments Profonds (STEP) and for the Centre National de Tri d'Oceanographie Biologique (CENTOB), a cooperative center established in 1974 and cosponsored by CNEXO and the Museum National d'Histoire Naturelle (MNHM).

COP is developing a program in aquaculture known as AQUACOP.

In 1974 CNEXO sponsored the Societe de Development de l'Aquaculture de Bretagne (SODAB), which became an independent society in 1976 upon CNEXO's sponsorship of the Unite Regionale de Development de l'Aquaculture (URDA). The group of URDA in northern France is called URDA-NORD; the other, which specializes in aquaculture in the Mediterranean area, is called URDA-SUD. URDA sponsors centers in both the north and south of France called Demonstration, Experimentation, et Valorisation de l'Aquaculture (DEVA).

CNEXO's program include Etudes des Moyens Spatiaux et Aeriens de l'Ocean (ESPADON) and the development of Navires Oceanographiques de Recherches, d'Observation, d'Intervention et de Soutien (NOROIS).

In 1977 CNEXO, in cooperation with the Compagnie Generale Maritime (CGM) and the Compagnie des Moyens de Surface Adaptes a l'Ocean (SURF) established the Groupement d'Interet Economique pour la Gestion des Navires Oceanologiques (GENAVIR).

France's navy or Marine Nationale includes a Centre d'Etudes et de Recherches Techniques Sous-Marines (CERTSM), a Groupe d'Etudes et de Recherches Sous-Marine (GERS), and the Groupe d'Intervention sous la Mer (GISMER). It is responsible for the Service Hydrographique et Oceanographique de la Marine (SHOM) whose Establissement Principal is known as EPSHOM and which includes a Bureau d'Etudes Oceanographiques (BEO).

The Institut Francais du Petrole (IFP), established in the 1950's, is concerned with problems related to offshore exploration for oil and gas. IFP maintains a documentation center. The Reseau National d'Observation de la Qualite du Mileu Marin (RNO) maintains a systematic surveillance of the coastal waters of France. The Centre Nationale de la Recherche Scientifique (CNRS) sponsors a group called MEDIPROD, the Biological Station at Roscoff, and a Centre pour l'Etude Oceanographique et Biologique Marine (CEOBM). The Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM) sponsors centers at Dakar, Senegal; Pointe-Noire, Abidjan, Ivory Coast; Noumea,

New Caledonia and Nosy-Be, Malagasy Republique. The Institut Scientifique et Technique des Peches Maritimes (ISTPM) maintains 10 stations along the French coast. The Bureau de Recherches Geologiques et Minieres (BRGM) is involved in offshore explorations. Other groups with interests in offshore geology are the Universite de Montpellier's Laboratoire de Geophysique Appliquee a l'Oceanographie (LGAO) and the Institut de Geologie du Bassin d'Aquitaine (IGBA).

Terres Australes et Antarctiques Francaises (TAAF) maintains several laboratories that do oceanographic research. The Centre de Recherches et d'Etudes Oceanographiques (CREO) is concerned with the protection of the marine environment. The Meteorologie Nationale (MN) has programs in marine meteorology and operates stationary weather ships. The Centre d'Etudes Marine Avancees (CEMA) researches underwater devices. The Centre National d'Etudes Spatiales (CNES) is concerned with applications of satellites and remote sensing to marine activities.

The Museum National d'Histoire Naturelle (MNHN) sponsors a Laboratoire d'Oceanographie Physique (LOP). The universities of Paris and Rennes and the Institut Oceanographique de Paris (IOP) also include LOP's. The Universite de Nice supports the Centre d'Etudes et des Recherches sur le Droit et l'Environement Marin (CERDEM).

A number of French agencies are involved in the Plan de la Lutte contre les Pollutions Marines Accidentelles (POLMAR), instituted originally in 1970 and strengthened in 1978 following the Amoco Cadiz catastrophe.

Other acronyms and abbreviations associated with France are AFEE--Association Francaise pour l'Etude des Eaux; ASTEO--Association Scientifique et Technique pour l'Exploitation des Oceans; COMEX--Compagnie Maritime d'Expertises; DORIS--Societe de Devèlopment Operationnel des Richesses Sous-Marines; SNPA--Societe Nationale des Petroles d'Aquitaine; CEPM--Comite d'Etudes Petrolieres Marines; FFESSM--Federation Francaise d'Etudes et des Sports Sous-Marins; and AFERNOD--Association Francaise pour l'Exploitation et la Recherche des Nodules.

618. GABON

The Service Maritime et Fluvial (SMF) is responsible for hydrographic surveys and related marine science activities.

619. GERMAN DEMOCRATIC REPUBLIC

The Academie der Wissenschaften des Deutsches Demokratisches Republik (DDR) includes an Institut fuer Meereskunde (IfM), which is responsible for most of the marine research activities in the DDR.

620. GERMANY, FEDERAL REPUBLIC OF

The Deutsches Ozeanographisches Datenzentrum (DOD), or German Oceanographic Data Center, was organized in 1967. It is attached to and administered by the Deutsches Hydrographisches Institut (DHI), which has long been involved in marine surveys. DOD receives advice from an advisory board of representatives from DHI and the Deutsche Forschungsgemeinschaft (DFG) or German Research Association. The Sonderforschungsberichte of the DFG (SFG) conducts marine research. Marine meteorology is handled by the Deutsches Wetterdienst Seewetteramt (DWS).

The Bundesanstalt fuer Unterwasserschall und Geophysik (BUG), also referred to as the Forschungsanstalt der Bundeswehr fuer Wasserschall und Geophysik (FWG), is sponsoring the Baltic Environmental and Acoustic Range (BALEAR). The Bundesforschungsanstalt fuer Fischerei (BUFOFI) includes the Institut fuer Fangtechnik (IfFang), the Institut

fuer Kusten-und Binnenfischerei (IfKuBiFi), and the Institut fuer Seefischerei (IfS). An Institut fuer Meeresforschung (IfMf) is at Bremerhaven. The Universitaet Hamburg and the Universitaet Kiel each have an Institut fuer Meereskunde (IfM) as well as other institutes with marine interests. The Institut fuer Meeresgeologie und Meeresbiologie "Senckenberg" is referred to as SaM. The Biologische Anstalt Helgoland (BAH), the Forschungsstelle fuer Insel- und Kustenschutz (FfIK), the Geologisch-Paleontologisches Institut (GPI) of the Universitaet of Kiel, the Krupp Atlas-Elektronik (KAE), and the Marineamt, Abteilung Geophysik (MarA), are all involved in marine research.

Other acronyms associated with the Federal Republic Of Germany are WIM--the German Marine Technical Trade Association and DKMM--the Committee on Marine Science and Technology, which is composed of members from 17 nongovernmental scientific, technical, and economic societies with interests in marine science and technology.

621. GUATEMALA

The Instituto Geografico Nacional (IGN) includes a Division Hidrografica, which is responsible for marine research and serves as Guatemala's national oceanographic data center. The Observatorio Nacional is responsible for marine meteorology.

622. GUYANA

Its Transport and Harbours Department (THD) is responsible for hydrographic surveying and tidal data.

623. HONDURAS

The Departmento de Geologia e Hidrografia of the Instituto Geografico Nacional (IGN) is responsible for marine research.

624. ICELAND

Marine science activities are the responsibility of the Marine Research Institute (MRI), which also serves as Iceland's designated national agency for oceanographic data. Iceland also includes a Hydrographic Service responsible for hydrographic surveying.

625. INDIA

The National Institute of Oceanography (NIO), established in 1966 in the Council of Scientific and Industrial Research (CSIR), serves as the national oceanographic data center for India and as the focal point for data and information about the Indian Ocean. NIO includes three research centers and operates a research vessel.

Other Indian agencies are the Naval Hydrographic Office (NHO); the Indian Meteorological Department (IMD); the Central Marine Fisheries Research Institute (CEMFRI or CMFRI); the Marine Products Export Development Authority (MPEDA); the Oil and Natural Gas Commission (ONGC), which sponsors off-shore explorations; the Bhabha Atomic Research Centre (BARC), which makes studies of radioactivity in the marine environment; and the Marine Biological Association of India (MBAI).

626. INDONESIA

The Lembaga Oseanologi Nasional (LON) or National Institute of Oceanography, which includes the Lembaga Penjelidikan Laut (LPL) or Institute of Marine Research, is responsible for marine research in Indonesia. Research for military purposes is conducted by the Dinas Hidrografi-Angkatan Laut (DISHIDRAL) or Naval Hydrographic Office. Fisheries research is conducted by the Institute of Marine Fisheries Research of the Department of Agriculture; initials for the Indonesian title are LPFL.

627. IRAN

The Safeman Banader va Keshti Rani (SBKR), or Ports and Shipping Authority, is responsible for hydrographic surveys.

628. IRELAND

The National Science Council (NSC) coordinates marine research in Ireland. The Department of Transport and Power (DTP) makes oceanographic surveys and the Irish Meteorological Service (IMS) is responsible for marine meteorology. The University College, Galway (UCG), the University College, Cork (UCC), and the Trinity College, Dublin (TCD) have active programs in marine science. The Department of fisheries (DOF) and the Salmon Research Trust (SRT) are concerned with research in aquaculture and fisheries.

629. ISRAEL

The Israel Oceanographic and Limnological Research Co. (IOLR), a nonprofit organization established in 1966 to formulate a national policy for marine science in Israel, is the national oceanographic data center and represents Israel in international marine science activities. It operates the Israel Oceanographic and Limnological Institute (IOLI), founded in 1975. In 1971 the Sea Fisheries Research Station (SFRS) of the Ministry of Agriculture was merged with IOLR, though the Ministry of Agriculture retained a part of the SFRS in its Fishery Department as the Fishery Technical Unit (FTU).

Israel's Port Authority includes a Coast Study Division (CSD) responsible for hydrographic surveys, and its Department of Meteorology is responsible for marine meteorology.

630. ITALY

The Consiglio Nazionale delle Ricerche (CNR) includes the Commissione Italiana per la Oceanografia (CIO), which in turn includes the Centro Nazionale Raccolta Dati Oceanografici (CNRDO), formerly the Servicio Nazionale...(SNRDO), Italy's oceanographic data center. Other organizations within CRO involved in marine activities include the Istituto di Biologia del Mare (IBM), formerly the Centro Studi Talassografici (CST), the Istituto di Ricerca sulle Acque (IRA), the Laboratorio per la Geologia Marina (LGM), the Laboratorio per lo Studio della Dinamica delle Grandi Masse (LSDGM), the Laboratorio di Tecnologia della Pesca (LTP), the Officine Allestimento e Riparazioni Navi (OARN), and the Laboratorio di Automozione Navale (LAN). CNR also includes the Centro Nazionale di Fisica dell'Atmosfera e Meteorologia (CENFAM), which includes research in marine meteorology.

The Istituto Idrografico della Marina (IIM) is responsible for hydrographic and physical oceanographic surveys and tide and current data. The Servizio Meteorologico dell'Aeronautica Militaire (SMAM) is concerned with marine meteorology. The Osservatoria Geofisico Sperimentale (OGS) at Trieste is involved in geophysical surveys of the Mediterranean and Adriatic Seas. Other institutions of interest are the Istituto di Geologia of the Universita di Trieste, the Istituto di Zoology of Parma University, and the Gruppo Oceanologico di Genova. The fish farmers of Italy have organized the Associazione Pescicoltori Italiana (API).

631. IVORY COAST (REPUBLIQUE DE COTE D'IVOIRE)

The Centre de Recherches Oceanographique (CRO) is responsible for most of the oceanographic activities. The Office de la Recherche Scientifique et Technique de la Outre-Mer (ORSTOM), with headquarters in France, supports a center at Abidjan. Hydrographic surveys are the responsibility of the Direction du Port Autonome d'Abidjan.

632. JAPAN

The Ministry of Transport includes the Japan Maritime Safety Agency (JMSA), which in turn includes the Hydrographic Department (HDMSA) HDMSA is responsible for oceanographic as well as hydrographic surveys and for the Japan Oceanographic Data Center (JODC). JODC, which began in 1965, also functions as the Kuroshio Data Center (KDC) sponsored by the Intergovernmental Oceanographic Commission IOC). Japan's Maritime Self Defense Force (JMSDF) in the Defense Agency is also responsible for oceanographic surveys.

Japan's Meteorological Agency (JMA) includes a Marine Department (MDJMA) concerned with marine meteorology for the whole of the North Pacific. The World Meteorological Organization (WMO) assigned it the responsibility for the publication of the series of Marine Climatological Summaries covering most of the North Pacific Ocean. JMA operates several marine observatories: Hakodate Marine Observatory (HMOJMA), Kobe Marine Observatory (KMOJMA), Maizuru Marine Observatory (MMOJMA), and Nagasaki Marine Observatory (NMOJMA). Japan's Fishery Agency (JFA) operates an extensive system of regional research fishery laboratories at Nansei (NRFRL), Nihonkai (NHRFRL), Hokkaido (HRFRL), Seikai (SRFRL), Tohuku (THRFRL), and Tokai (TRFRL). In addition it operates the Far Seas Fisheries Research Laboratory (FSFRL). The Geological Survey of Japan (GSJ) is making marine geological surveys along Japan's coast and in other areas of the Pacific investigating deep-sea mineral resources. Other acronyms or abbreviations are JWIC--Japanese Whaling Information Center, JAMARC--Japan Marine Fishery Resource Center, JARE--Japanese Antarctic Research Expedition, JAMSTEC--Japan Marine Science and Technology Center, JAERI--Japan Atomic Energy Research Institute, JMS--Japanese Meteorology Society, PIMA--Petroleum Industries Marine Association, and NIPR--National Institute of Polar Research.

There are universities of fisheries at Shimonoseki (SUF) and Tokyo (TUF). Other universities of interest are the University of Tokyo, which supports and Ocean Research Institute (ORITU); Tokai University which has a College of Marine Science and Technology (CMSTTKU), and others which have faculties of fisheries: Hokkaido (HU), Kagoshima (KU), Mie (MU), and Nagasaki (NU).

633. KOREA

The Technical Cooperation Bureau (TCB) of the Ministry of Science and Technology serves as the national oceanographic data center for Korea. Korea's Hydrographic Office (HO) and its Fisheries Research and Development Agency (FRDA) are active in marine research, and its Central Meteorological Office (CMO) is responsible for marine meteorology. Other acronyms and abbreviations are IECOK--International Economic Consultative Organization for Korea and KMIDC--Korea Marine Industry Development Corporation.

634. KUWAIT

The Institute of Coastal Oceanography and Tides (ICOT) is responsible for marine research. Hydrographic surveying is the responsibility of the Customs and Ports Affairs in the Ministry of Finance and Oil, and marine meteorology is handled by the Meteorological Section in the Ministry of Interior.

635. MALAGASY REPUBLIC

The Direction des Affaires Maritimes (DAM) includes an office responsible for hydrographic surveying. Marine research is conducted by the French Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM), which has a center at Nosy-Be.

636. MALAYSIA

Its Hydrographic Department (HD) is responsible for hydrographic and oceanographic surveys.

637. MEXICO

Mexico's national oceanographic data center, the Centro Nacional de Datos Oceanograficos (CENADA) is in the Instituto de Geofisica of the Universidad Nacional Autonoma de Mexico (UNAM).

The Secretaria de Marina includes the Direccion General de Oceanografia y Senalamiento Maritima (DGOSM), the Direccion General de Obras Maritimas (DGOM), the Direccion General de Operacion Portuaria (DGOP), and the Direccion de Educacion Naval (DEN), all of which are involved in marine science affairs. DGOSM was formerly responsible for the Centro de Datos Oceanograficos (CEDO) established in 1973 and transferred to UNAM where it was renamed.

The Secretaria de Industria y Comercio (SIC) is responsible for fishing and related oceanographic research. It includes the Direccion General de Regiones Pesqueras (DGRP), the Direccion General de Planeacion y Promocion Pesqueras (DGPPP), the Direccion General de Tecnologia Pesquera (DGTP), the Direccion General de Capacitacion y Fomento Cooperativo Pesquero (DGCFCP), the Instituto Nacional de Pesca (INP), and the Centro de Informacion de Pesca (CIP). A Comision Nacional Consultiva de Pesca (CNCP), an intersecretarial commission that provides SIC and other secretaries with advice regarding fisheries, is composed of representatives from the Government and from nongovernment organizations involved with fisheries.

Marine meteorology is largely the responsibility of the Servicio de Meteorologia Nacional (SMN) in the Secretaria de Agricultura y Granadera (SAG). The Secretaria de Recursos Hidraulicos (SRH) is concerned with the protection of coastal waters and the optimum use of resources therein.

Several presidential commissions have been established to develop plans for activities in the marine area. One, the Comision de Estudios del Terretorio Nacional (CETENAL), is developing plans for mapping marine areas and establishing a national service for marine cartography. The Comision Federal de Electricidad (CFE) is concerned with the establishment of nuclear generating plants in the marine environment.

The Fideicomiso Unico para el Desarrollo de la Flora y Fauna Acuatica (FUDFYFA) is concerned with the preservation of flora and fauna in the marine environment. The Fideicomiso para el Desarrollo de la Fauna Acuatica (FIDEFA) is concerned with maintaining ecological systems for the cultivation, preservation, protection, and commercialization of marine fauna; and the Fideicomiso para la Educacion Pesquera Integral (FEPI) was created to promote fishery education and training.

Petroleos Mexicanos (PEMEX) and the Instituto Mexicano del Petroleo (IMP) cooperate in scientific explorations for oil in Mexico's coastal zone.

Coordination of Mexico's marine science activities is one of the tasks of the Consejo Nacional de Ciencia y Tecnologia (CONACYT).

Mexico's research and other institutions of higher education involved in marine science activities include the Centro de Investigacion Cientifica y Educacion Superior de Ensenada (CICESE), a collaborative institution formed in 1973 which specializes in physical oceanography; and the Instituto Poletecnico Nacional (IPN) that includes the Escuela Nacional de Ciencias Biologicas (ENCB), the Escuela Superior de Ingenieria Mecanica y Electrica (ESIME), the Escuela Superior de Ingenieria y Arquetectura (ESIA), and the Centro

de Investigacion y Estudios Avanzados (CIEA), all of which are involved in various aspects of ocean engineering.

The Instituto Tecnologico y de Estudios Superiores de Monterrey (ITESM) includes the Escuela Superior de Ciencias Maritimas y Techologia de Alimentos (ESCMTA). The Universidad Automona de Baja California (UABC) includes the Instituto de Investigaciones Oceanologicas (IIO).

The Universidad de Nayarit (UNINAY) has the Escuela Superior de Oceanografia (ESO).

Many departments of the Universidad Nacional Autonoma de Mexico (UNAM) are involved in marine science affairs. In 1973 UNAM created the Centro de Ciencias del Mar y Limnologia (CCML) to coordinate marine science programs. Together with CIEA and ESIME, UNAM established the Servicio Nacional de Instrumentacion Oceanografica (SNIO), which UNAM administers.

638. MOROCCO

The Institute of Marine Fisheries serves as the national oceanographic data center. The Service des Phares et Balises (SPE) is responsible for hydrographic and related oceanographic surveys. An Office National des Peches (ONP) was established in 1969 to develop and modernize Morocco's fisheries.

639. MOZAMBIQUE

The Empresa Nacional de Comercializacao de Produtos Pesquieros (PESCOM) was established in 1977 to market Mozambique's fishery products.

640. NETHERLANDS

The Nederlands Centrum voor Oceanografische Gegevens (NCOG), its national oceanographic data center, is a part of the Nederlands Commissie voor Zee-onderzoek (NCZO) in the Koninklijke Nederlandse Akademie van Wetenschappen (KNAW). NCZO also coordinates marine science activities in the Netherlands and acts as an advisory body to the government.

An Interdepartmental Commission for Oceanography, whose initials are ICVO, establishes policy decisions at the national and international level, and the Netherlands Industrial Council for Oceanology, whose initials are IRO, coordinates governmental and industrial interests.

Government agencies with marine science responsibilities include the Koninklijk Nederlands Meteorologisch Instituut (KNMI) responsible for marine meteorological activities. KNMI's activities are worldwide, but particularly include the coastal area of Netherlands. It operates a warning service to notify the population when storm surges pose a danger. It participates with WMO in its program of marine climatological summaries, and its areas of responsibility are the Mediterranean Sea and the southern Indian Ocean.

Other Government agencies of interest are the Rijks Instituut voor Visserijonderzoek (RIVO), the Rijks Geologische Dienst (RGD), the Dienst Hydrografie der Koninklijke Marine (KMDH) and the Rijkswaterstaat (RW).

The Instituut voor Visserijprodukten (IVP), Nederlands Instituut voor Onderzoek der Zee (NIOZ), and the Vening Meinesz Laboratorium der Rijksuniversiteit Utrech (VML), are nongovernmental agencies of interest.

641. NEW CALEDONIA

France's Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM) includes a center at Noumea.

642. NEW ZEALAND

The Department of Scientific and Industrial Research (OSIR) includes the New Zealand Oceanographic Institute (NSOI) responsible for most of the civilian oceanographic research. The Defense Scientific Establishment (DSE) is responsible for oceanographic research for the military and the Ministry of Agriculture and Fisheries (MAF) for fishery research.

643. NICARAGUA

The Ministerio de Obras Publicas (MOP) includes a hydrographic section responsible for hydrographic surveying.

644. NIGERIA

The Nigerian Ports Authority (NPA) and the Hydrographic Office of the Nigerian Navy (NNHO) are primarily responsible for physical oceanographic surveys. The Nigerian Institute for Oceanography and Marine Research (NIOMR) specializes in marine biological and fishery research.

645. NORWAY

The Norsk Oseanografisk Datasenter (NOD) is a part of the Fiskeridirektoratet Havforskningsinstitutt (FHI) or Institute of Marine Research. FHI is a major participant in marine research programs in Norway. Others are the Forsvarets Forskningsinstitutt Avdeling for Undervannskrigsforskning (FFIU) or Division of Underwater Warfare of the Norwegian Defense Research Establishment, the Meteorologisk Institutt (MI), and the Norges Sjorkartneik (NS) or Hydrographic Office. Marine research is conducted at the Universitetet i Bergen (UIB), the Universitetet i Oslo (UIO), the Universitetet i Tromso (UIT), and the Universitetet i Trondheim.

Norway's oceanographic program is given direction by the Norges Almenirlenskapeligi Forskningsrad (NAVF), the Norsk Oseanografisk Komite (NOK), and the Norwegian Council of Fisheries whose abbreviation is (NFFR).

646. PAKISTAN

The Hydrographic Department (HD) of the Pakistan Navy serves as the national center for oceanographic data. The Meteorological Department (MD) is concerned with marine meteorology. Fishery research is the concern both of the Department of Fisheries (FD) in the Ministry of Agriculture and Works (MAW) and of the Institute of Marine Biology at Karachi University (KUIMB).

647. PANAMA

The Instituto Geografico Nacional (IGN) is responsible for marine research.

648. PERU

The Oceanographic Department of the Instituto del Mar del Peru (IMARPE) is the designated national agency for oceanographic data. Other agencies involved in marine research are the Direccion de Hidrografia y Navegacion de la Marina (DHN), Direccion de Meteorologia (DM), and Ministerio de Pesqueria (MP). The Universidad Nacional "Federico Villarreal" (UNFV) includes programs in marine sciences.

649. PHILIPPINES

The Philippine Oceanographic Data Center (PODC) is in the Bureau of Coast and Geodetic Survey (BC&GS), which is also responsible for oceanographic and hydrographic surveys. The Bureau of Fisheries and Aquatic Resources (BF&AR) is responsible for marine biology as well as fishery research, the Bureau of Mines (BOM) for marine geological surveys, and the Weather Bureau (WB) for marine meteorology.

650. POLAND

The Oddzial Morski, Instytut Meteorologii i Gospodarki Wodnej (IMGW/OM) (Marine Division of the Institute of Meteorology and Water Economy) is the national oceanographic data center for Poland. Other agencies with marine interests are the Instytut Morski (IM) or Marine Institute, Morski Instytut Rybacki (MIR) or Sea Fisheries Institute, and Zaklad Oceanologii Instytut Geofizy (ZOIG) or Oceanology Section of the Geophysical Institute of the Polska Akademia Nauk (PAN) or Polish Academy of Science.

651. PORTUGAL

Agencies concerned with marine research include the Comissao de Estudo do Aprovatomento do Leito do Mar (CEALM) in the Direccao General dos Servicos de Fomento Maritimo Marinho (DGSFMM), the Instituto Hidrografico (IH) the Instituto de Biologia Maritima (IBM), the Centro de Biologia Aquatica Tropical Ministerio do Ultramar (CBATMU), and the Servicio Meteorologico Nacional (SMN).

652. ROMANIA

The Institutul Romin de Cercetari Marine (IRCM) and the Directoria Hidrografica Maritima (DHM) are responsible for most of Romania's marine research activities. IRCM is Romania's designated national agency for oceanographic data exchange.

653. SENEGAL

Marine research is largely the responsibility of the Centre de Recherches Oceanographiques de Dakar-Thiaroye (CRODT) and the Direction d'Oceanographie et des Peches Maritimes (DOPM). France's Office de la Recherche Scientifique et Technique d'Outre-Mer (ORSTOM) sponsors a center at Dakar.

654. SOUTH AFRICA

The Council for Scientific and Industrial Research (CSIR) includes the National Research Institute for Oceanography (NRIO). It is also responsible for the South African National Commission for Oceanographic Research (SANCOR). Other agencies concerned with marine research are the Hydrographic Office (HO) of the South African Navy, Sea Fisheries Branch (SFB) of the Department of Industries, and Weather Bureau (WB).

The University of Cape Town supports an Institute of Oceanography (UCTIO) active in marine research. Other acronyms associated with South Africa are SAIOR--South African Institute for Oceanographic Research, SASCAR--South African Scientific Committee for Antarctic Research, SOEKOR--Southern Oil Exploration Company, and FISCOR or VISCOR--Fisheries Development Corporation.

655. SPAIN

The Instituto Espanol de Oceanografia (IEO) is responsible for marine research activities and for the Centro Espanol de Datos Oceanograficos (CEDO), Spain's national oceanographic data center. Hydrographic surveying is the responsibility of the Instituto Hidrografico

de la Marina (IHM), fishery and marine biological research are conducted by the Instituto de Investigaciones Pesqueras (IIP), and marine meteorology is the responsibility of the Servicio Meteorologico Nacional (SMN).

656. SRI LANKA (CEYLON)

The Hydrographic Branch of the Royal Ceylon Navy is responsible for hydrographic and other marine surveys.

657. SWEDEN

The Fishery Board of Sweden (FBS) is the designated national agency for oceanographic data exchange and is also responsible for fishery and marine biological research. The Sveriges Meteorologiska och Hydrologiska Institut (SMHI) is responsible for physical oceanographic and hydrographic surveying and marine meteorology. The Swedish Environmental Protection Board (SEPB) is concerned with marine pollution research.

Goteborgs Universitet's (GU) departments of analytical chemistry, marine microbiology, oceanography, zoology, zoophysiology are particularly active in marine research.

658. TAIWAN

The Chinese National Committee for Ocean Resources (CNOR) coordinates marine research in the Taiwan. While the Chinese Naval Hydrographic and Oceanographic Office (CNHOO) and the Chinese Naval Meteorology Center (CNMC) are active in marine research and data gathering activities, most of the marine research appears to be performed by the National Taiwan University's (NTU) institute of Oceanography. The Chinese Petroleum Corporation (CPC) is active in exploration for offshore deposits of oil and gas.

659. THAILAND

The Thai National Documentation Centre (TNDC) represents Thailand in matters pertaining to international exchange of data and information. The Hydrographic Department of the Royal Thai Navy (RTN/HD) is responsible for physical oceanographic surveys and the Department of Fisheries in the Ministry of Agriculture and Cooperation (MAC/FD) is responsible for fishery and marine biology research.

Chulalongkorn and Kasetsart Universitites support marine research, particularly marine biology.

660. TURKEY

The Seyir Hidrografi ve Osinografi Dairesi Baskanligi (SHODB) or Department of Navigation, Hydrography, and Oceanography, is the designated national agency for oceanographic data exchange and is responsible for marine surveys. The Meteoroloji Genel Mudurlugu (MGM) or Meteorological Department is responsible for marine meteorological activities.

661. UNION OF SOVIET SOCIALIST REPUBLICS (USSR)

Research in oceanography is coordinated by the Oceanographic Committee of the U.S.S.R. and by the Oceanographic Commission of its Akademiya Nauk (ANSSSR). The U.S.S.R. also sponsors an oceanographic data center.

The Akademiya Nauk, or Academy of Sciences, includes an Institut Okeanologiy (IOAN), which sponsors research in the world's oceans and operates several research vessels. The Ukrainskaya Akademiya Nauk (UAN), or Ukrainian Academy of Sciences, includes a Marine Hydrophysical Institute and an Institute for Biology of the Southern Seas.

The State operates the Gosudarstvennyy Okeanograficheskiy Institut (GOIN) or State Oceanographic Institute and Vsesoyuznyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii (VNIRO) or All-Union Scientific Research Institute of Marine Fisheries and Oceanography.

Other institutions specialize in area studies and include: the Arkticheskiy i Antarkticheskiy Nauchno Issledovatel'skiy Institut (AANII) or Arctic and Antarctic Scientific Research Institute; Azovsko-Chernomorskiy Nauchno-Isseldovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii (AZCHERNIRO) or Azov-Black Sea Scientific Research Institute of Marine Fisheries and Oceanography; Azovskiy Nauchno Issledovatel'skiy Institut Rybnogo Khozyaystva (AZNIIRKH) or Azov Scientific Research Institute of Fisheries; Baltiyskiy Nauchno-Isseldovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii (BALTNIRO) or Baltic Scientific Research Institute of Marine Fisheries and Oceanography; Kaspiyskiy Nauchno-Issledovatel'skiy Institut Rybnogo Khozyaystva (KASPNIIRKH) or Caspian Scientific Research Institute of Fisheries; Nauchno-Issledovatel'skiy Institut Rybnogo Khozyaystva (NHRKH) or Scientific Research Institute of Fisheries; Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii (PINRO) or Polar Scientific Research Institute of Sea Fisheries and Oceanography; Tikhookeanskiy Institut Rybnogo Khozyaystva (TIRKH) or Pacific Ocean Fisheries Institute; Tikhookeanskaya Okeanograficheskaya Nauchnaya Stantsiya (TONS) or Pacific Ocean Oceanographic Scientific Station; Severnyy Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii (SEVPINRO) or North Polar Scientific Research Institute of Marine Fisheries and Oceanography; Tsentral'nyy Nauchno-Issledovatel'skiy Institut Informatskiy i Techniko Ekonomicheskikh Issledovaniy Rybnogo Khozyaystva (TSNIITEIRKH) or Central Scientific Research Institute of Technical and Economic Investigations of the Fisheries; and Tikhookeanskiy Nauchno-Issledovatel'skiy Institut Rybnogo Khozyaystva i Okeanografii (TINRO) or Pacific Research Institute of Fisheries and Oceanography.

The U.S.S.R. is responsible for the Mirovoy Tsentr Dannykh V1 (MTD-V1), or World Data Center-B for Oceanography (WDC-B). The Moskovskiy Gosudarstvennyy Universitet (MGU) or Moscow State University is involved in programs to educate oceanologists; it also has marine research programs. Some of the programs sponsored by the U.S.S.R. are identified by acronyms only: BIOTALASSA--a study of the oceanological basis for bioproductivity of propective open-ocean fishing grounds; BIOSHELF--a study of the shelf and continental divide; DINEKT--a study of the dynamics of equatorial currents and structure of water; GEOS--a study of sedimentary layers in the ocean; and VOLNA--a study of surface and internal waves.

662. UNITED KINGDOM: UK

The Natural Environmental Research Council (NERC) established in 1967 to consolidate environmental research activities in the UK includes several institutes and other groups involved in marine research activities: the British Antarctic Survey (BAS), the Institute for Geological Sciences (IGS), the Institute of Marine Biology (IMB), the Institute of Oceanographic Sciences (IOS), and the Institute of Marine Environmental Research (IMER).

IOS, established in 1973, inherited the functions of the National Institute of Oceanography (NIO), the Institute of Coastal Oceanography and Tides (ICOT), and a unit on coastal sedimentology, all of which were abolished with the creation of IOS. In 1977, IOS created within its structure the Marine Information and Advisory Service

(MIAS) to replace the abolished British Oceanographic Data Service (BODS). MIAS is developing an oceanographic data base and recently established a Wave and Current Advisory Service (WACAS).

IOS is responsible for the Marine Scientific Equipment Service (MSES) and the Standard Seawater Service (SSS). The latter, once a responsibility of the International Council for the Exploration of the Sea (ICES), was transferred to IOS in 1976. IOS has three stations identified as IOS-B (at Bideston), IOS-T (at Taunton), and IOS-W (at Wormley).

IMER was established in 1970 and inherited the Scottish Marine Biological Association (SMBA) at Edinburgh and the Seal Research and Fisheries Unit (SRFU) at Lowestoft.

NERC is a participant in several interdepartmental and advisory committees of interest including the Advisory Committee on International Oceanographic Affairs (ACIOA), the Inter-Research Council Committee on Pollution Research (IRCCOPR), and the Study Committee on Ocean Data Stations (SCODS).

The British Ministry of Defense includes the British Admiralty and the British Hydrographic Department (HD). The former includes several units of interest: the Admiralty Marine Engineering Establishment (AMEE), the Admiralty Oil Laboratory (AOL), and the Admiralty Research Laboratory (ARL).

Fishery research is the responsibility of the Ministry of Agriculture, Fisheries, and Food (MAFF). The Department of Energy (DOE) sponsors an Advisory Group on Environmental Data for Offshore Structures (AGEDOS) and the Marine Pollution Management Group (MPMG) that coordinates activities and collects information about marine pollution, and the Offshore Installations Technical Advisory Committee (OFINTAC). The Meteorological Office (METO) is closely involved in marine meteorology.

There are a number of British national committees of interest: the British National Committee on Antarctic Research (BNCAR), on Ocean Engineering (BNCOE), and on Ocean Research (BNCOR). Other groups are the Advisory Committee on Oil Pollution of the Sea (ACOPS); the Offshore Technology Board (OFTB) established in 1973; and the Ship and Marine Technology Requirements Board (SMTRB), which was established in 1972 replacing the Committee on Marine Technology (CMT) established in 1968.

Some of the groups sponsored by industry include the North Sea Oceanographic Study Group (NSOSG) formed in 1972 by a consortium of oil companies to provide more reliable information on environmental conditions prevailing in the North Sea: the Construction Industry Research and Information Association (CIRIA) which established an Underwater Engineering Group (UEG) in 1968 to serve as a clearinghouse for information on decompression and other technical matters; the National Maritime Institute (NMI) established in 1976 and concerned with obtaining and providing wave data to the offshore industry; and the United Kingdom Offshore Operators Association (UKOOA) which includes an Oceanographic Committee concerned with data and information on oceanographic conditions affecting offshore operations.

The Marine Biological Association (MBA), an independent organization established in 1884, initiated a Marine Pollution Documentation and Information Center (MARPDIC) in 1970. The Scott Polar Research Institute (SPRI), an independent organization established in 1925, conducts research and promotes education in polar matters, particularly in the Antarctic.

Other British organizations include the British Maritime Law Association (BMLA), the British Ship Research Council (BSRC), the Estuarine and Brackish-water Sciences Association (EBSA), the General

Council of British Shipping (GSBS), and an Institute of Offshore Engineering (IOE) located at Heriot-Watt University whose purpose is to coordinate approaches to offshore engineering problems. A number of organizations promote the protection of seabirds and take strong stands for the environmental protection of coastal waters. They are the British Ornithologists Union (BOU), the British Trust for Ornithologists (BTO), the Royal Society for Protection of Birds (RSPB), the Scottish Ornithologists Club (SOC), and Wildfowl Trust (WFT).

Acronyms associated with marine programs are RANOSP--Radiological North Sea Project; and TWERLE--Tropical Wind Energy Conversions and Reference Level Experiments.

Members of the British Commonwealth having marine interests include the Bermuda Biological Station (BBS) and the Hong Kong Fisheries Research Station (FRS). BBS's programs include the Bermuda Inshore Waters Investigation (BIWI).

663. URUGUAY

Marine research is largely conducted by the Servicio de Oceanografia e Hidrografia (SOH) de la Armada.

664. VENEZUELA

The Direccion de Hidrografia y Navegacion (DHN) is responsible for hydrographic and physical oceanographic surveys, and the Oficina Nacional de Pesca (ONP) conducts fishery and marine biological research.

The Instituto Oceanografico of the Universidad de Oriente (IOUO) and the Estacion de Investigaciones Marinas de Margarita (EIMM) of the Fundacion La Salle de Ciencias Naturales (FLSCN) have extensive oceanographic programs - biological, chemical, geological, meteorological, and physical.

665. YUGOSLAVIA

The Hidrografski Institut Jugoslavenske Ratne Mornarice (IHIJRM) or Hydrographic Institute of the Yugoslav Navy is responsible for much of the government's marine science research. Other marine research groups include the Institut za Oceanografiju i Ribarstivo (IOR) or Institute of Oceanography and Fisheries at Split, the Institut za Biologiju Mora i Oceanografiju (IBMO) at Kotor, the Biologiju Institut (BI) at Dubrovnik, the Zavodza Biologiju Mora (ZBM) of the University of Ljubljana, and the "Ruder Boskovic" Institut (RBI) at Rovinj and Zagreb. The Hidrometeorologskog Zavodas (HZ) or Hydrometeorological stations at Ljubljana and Titograd are responsible for marine meteorology.

666. TERMS ASSOCIATED WITH FISHERY MANAGEMENT

The Fishery Conservation and Management Act of 1976 (FCMA) establishing a 200-mile protective zone for U.S. fisheries resulted in an all-out effort to identify means to control fishing activities. A number of terms were developed, each of which is identified by an acronym or abbreviation. They are: Acceptable Biological Catch (ABC), a seasonably determined catch differing from MSY due to biological fluctuations; Domestic Annual Fishing Capacity (DAC), the total potential capacity of the fleets modified by logistics factors; Expected Domestic Annual Fishing Harvest (DAH), the annual fishing capacity of the fleets, modified by external factors such as price changes, which will determine estimates of what the fleet will harvest, and does not exceed the optimum yield (OY); Equilibrim Yield (EY), the annual or seasonal harvest which maintains the resource at approximately the same level of abundance in succeeding years or seasons and differing from MSY in that the sustained level of abundance does not have to be at the maximum sustained level; Foreign Allowable Catch (FAC), which is determined by deducting the Domestic Annual Expected Harvest from the Optimum Yield (OY-DAH-FAC); Maximum Economic Yield (MEY) occurs when the difference between the value of the catch and the cost of fishing is at a maximum and the profit margin is at its greatest; Maximum Sustainable Yield (MSY), the average over a reasonable length of time of the largest catch which can be taken continuously from a stock under current environmental conditions; Optimum Yield (OY) differs from the Acceptable Biological Catch for purposes of promoting economic, social, or ecological objectives as established by law and public participation processes; Total Allowable Catch (TAC), the limitation established for fisheries.

Other terms are Catch Per Unit Effort (CPUE); Continental Marine Recreational Fishing (MRF); and Governing International Fishing Agreements (GIFA), a term referring to agreements between the U.S. and foreign governments to make surplus catches within the 200-mile area available to foreign fishing vessels.

The Inter-American Tropical Tuna Commission (IATTC) uses several terms in its reports. They are Catch per Standard Day of Fishing (CPSDF), Commission's Regulatory Area (CRA) and Commission's Yellowfin Regulatory Area (CYRA).

667. TERMS ASSOCIATED WITH MARINE MAMMAL PROTECTION (MMP)

At its founding, the International Whaling Commission (IWC) established a ceiling on total catch of whales; known as the Blue Whale Unit (WU), a unit covered several species such as 1 blue whale or 2 fin whales or 2 1/2 humpback, and so forth. In 1972 the BWU limit was replaced by separate catch units.

Optimum Sustainable Population, (OSP) is used to indicate the number of animals needed to result in maximum productivity.

668. TERMS ASSOCIATED WITH MARINE METEOROLOGICAL DATA

The World Meteorological Organization (WMO) uses the term Meteorological Aspects of Ocean Affairs (MAOA) when referring to the interaction between meteorology and oceanography; the term Marine Meteorological Services System (MMSS) when referring to the means by which marine meteorological services are obtained; and the term Meteorological Services to Marine Activities (MSMA) when describing monitoring activities of the atmosphere were oceanic areas to provide forecast and other services in support of marine activities.

Marine meteorological data may be held by Regional Meteorological Centers (RMCs) established to service meteorological data from specialized regions and National Meteorological Centers (NMCs).

WMO's Commission on Marine Meterology was responsible for the development of the Sea Ice Observation Code (ICEOB) which consists of pictorial descriptions of ice in code form. ICEOB disregards the manner in which the observations are taken--air, ship, or shore. WMO also developed the International Marine Meteorological Punch Card (IMMPC) adopted for use during IGOSS.

669. TERMS ASSOCIATED WITH THE LEGAL ASPECTS OF THE SEABED

With the increasing importance of the resources of the oceans and the international negotiations associated with the use of the seabed, several terms have come into common usage. The Exclusive Economic Zone (EEZ) is usually the 200-mile zone extending outward from the coast line wherein adjacent coastal nations may exercise a high degree of control over the natural and mineral resources. The term Outer Continental Shelf (OCS) is frequently used but loosely defined. Usually it refers to the shelf area that extends outward to the 200-meter isobath. The area beyond the jurisdiction of coastal states is referred to as the International Seabed Area (ISBA).

670. TERMS ASSOCIATED WITH INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE

Oceanographic programs conducted by member nations of the Intergovernmental Oceanographic Commission (IOC) may be designated by the member nation as Declared National Programs (DNP), in which case the data must then be exchanged internationally through World Data Centers (WDCs) and become a part of the international marine data base of the world,or as National Oceanographic Programs (NOP), in which case submission of data is voluntary. National interests usually provide data to the international community through National Oceanographic Data Centers (NODC) or, in the absence of an official NODC, through a Designated National Agency (DNA).

NODCs are supplemented by Regional Data Centers (RDCs), which serve either as data centers acting for several countries in a region such as the Service Hydrographique of the International Council for the Exploration of the Sea (ICES) or as centers responsible for handling all data collected during a cooperative investigation sponsored by the IOC. Responsible National Oceanographic Data Centers (RNODCs) are part of the world network for data exchange and are supplementary to and supportive of the World Data Centers (WDCs). RNODCs are usually NODCs that have expertise and sophistication in handling data and who volunatrily assume the additional responsibilities for accessioning, processing, and servicing data which, by international agreement, shall be exchanged and which are from nations other than their own. The IOC Working Committee on International Oceanographic Data Exchange (IODE) is responsible for exchange agreements through WDCs, NODCs, and RNODCs.

671. STANDARD FORMATS FOR INVENTORING AND EXCHANGING OCEANOGRAPHIC DATA

In 1971 the Intergovernmental Oceanographic Commission (IOC) adopted an inventory form designed by the two World Data Centers (WDC) for Oceanography for reporting the taking of multidisciplinary data; and information derived from the forms is used for compiling inventories and for referral purposes. The form, called Report of Observations/ Samples Collected by Oceanographic Programs (ROSCOP) was revised by IOC in 1974.

Marine geological and geophysical data activities are reported on the International Geological/Geophysical Cruise Inventory (IG/GCI)

form developed jointly by the Commission on Marine Geology (CMG), SCOR, IOC, and WDC-A for Oceanography. Completed forms are sent to WDC-A for storage, cataloging, and plotting, CMG is inventorying data taken before 1970 when IG/GCI was adopted and the ultimate result of the inventory is to be a catalog or ready reference to the geographic coverage of marine geological and geophysical data.

An International Numbering System for Tides (INST) locates tides by quadrants and latitude and longitude.

The IOC developed standard formats for exchanging oceanographic data. IOC General Format No. 3 (GF3) is the most recent version of the general-purpose data exchange format. Two special formats are also used for telecommunicated data. These are called OCEAN SYNDARC BATHY, which is used to transmit messages containing bathythermograph data, and OCEAN SYNDARC TESAC, which is used to transmit temperature, salinity, and current data.

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Zaklad Oceanologii Instytut Geofizy (ZOIG): 650

Zavodza Biologiju Mora (ZBM): 665

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This alphabetical listing is keyed to the entry numbers in Parts I through IV. Some entries are unkeyed because there was insufficient time to research them to determine their proper context.

ACE: Army Corps of Engineers: 377, 381, 422

ACENTO: Augmented Colombian El Nino Tuna Oceanography: 274

ACFM: Advisory Committee on Fishery Management: 65

ACI: Asociacion Cartografica Internacional: See ICA

ACI: Association Cartographique Internationale: See ICA

ACIC: Aeronautical Chart and Information Center: 380

ACIOA: Advisory Committee on International Oceanographic Affairs: 662

ACLOS: Advisory Committee on the Law of the Sea: 361

ACMRR: Advisory Committee on Marine Resources Research: 17, 18, 122, 225, 227, 229, 256

ACODAC: Acoustic Data Capsule

ACOH: Advisory Committee for Operational Hydrology: 28

ACOMR: Advisory Committee on Oceanic Meteorological Research: 28, 225

ACOPS: Advisory Committee on Oil Pollution of the Sea: 662

ACPP: Advisory Committee on Polar Programs: 416

ACS: American Cetacean Society: 474

ACS: Atmosphere Climate Study: 315

ACSM: American Congress on Surveying and Mapping: 473

ADAPTS: Air Delivered Anti-Pollution Transfer System: 412

ADE: Arctic Development and the Environment: 134

ADEC: Alaska Department of Environmental Conservation: 421

ADEOS: Air Droppable, Expendable Ocean Sensor

ADF&G: Alaska Department of Fish and Game: 421

ADRAMS: Air Droppable Measurement System: 372

ADS: Anomaly Dynamics Study: 315

AE: Amazon Expedition: 246

AEB: Arctic Environmental Buoy: 372

AEC: Atomic Energy Commission: 399, 417

AEFC: Atlantic Estuarine Fisheries Center: 367

AEFS: Arctic Environmental Field Station: 413

AEG: Atlantic Environmental Group: 369

AEIDC: Arctic Environmental Information and Data Center: 421

AERL: Arctic Environmental Research Laboratory: 413

AERS: Atlantic Estuarine Research Society: 510

AES: Atmospheric Environmental Service: 602

AEWC: Alaska Eskimo Whaling Commission: 421

AEWES: Army Engineers Waterways Experiment Station: 381

AFAR: Azores Fixed Acoustic Range: 231

AFC: Alaska Fisheries Center: 369

AFDC: Alaska Fisheries Development Corporation: 421

AFEE: Association Francaise pour l'Etude des Eaux: 617

AFERNOD: Association Francaise pour l'Exploitation et la Recherche des Nodules: 617

AFMAB: Atmospheric Forcings for the Mid Atlantic Bight: 328

AFOS: Automation of Field Operations and Services: 378

AFRF: American Fisheries Research Foundation: 477

AFS: American Fisheries Society: 476

AFSIP: American Fisherman's Safety Incentive Program: 478

AGA: American Gas Association: 479

AGARD: Advisory Group for Aerospace Research and Development: 81

AGEDOS: Advisory Group on Environmental Data for Offshore Structures: 662

AGI: American Geological Institute: 480

AGI: Annee Geophysique Internationale: See IGY

AGOR: Auxiliary General Oceanographic Research: 392

AGS: American Geographical Society: 481

AGS: Auxiliary General Survey: 392

AGU: American Geophysical Union: 482

AHF: Allan Hancock Foundation: 425

AHOS: Automated Hydrologic Observation System

AIBS: American Institute of Biological Sciences: 483

AICFO: Asociacion Internacional para las Ciencias Fisicas del Oceano: See IAPSO

AID: Agency for International Development: 410

AIDJEX: Arctic Ice Dynamics Joint Experiment: 111, 250, 372

AIEA: Agence Internationale de l'Energie Atomique: See IAEA

AIFRB: American Institute of Fishery Research Biologists: 484

AIG: Association Internationale de Geodesie: See IAG

AIGA: Association Internationale de Geomagnetisme et d'Aeronomie: See IAGA

AIHC: Asociacion Internacional de Hidrologia Cientifica: See IASH

AIHS: Association Internationale d'Hydrologie Scientifique: See IAHS

AIICA: Asociacion Internacional sobre Investigaciones Relativas a la Contaminacion de las Aguas: See IAWPR

AIIH: Asociacion Internacional de Investigaciones Hidraulicas: See IAHR

AIL: Asociacion Internacional de Limnologia Teorica y Aplicada: See IAL

AIL: Association Internationale de Limnologie Theorique et Appliquee: See IAL

AIME: American Institute of Mining Engineers: 486

AIME: American Institute of Mining, Metallurgical, and Petroleum Engineers: 486

AIMFA: Asociacion Internacional de Meteorologia y Fisica Atmosferica: See IAMAP

AIMLC: Association of Island Marine Laboratories of the Caribbean: 135

AIMPA: Association Internationale de Meteorologie et de Physique Atmospherique: See IAMAP

AIMS: American Institute of Merchant Shipping: 485

AIMS: Australian Institute of Marine Sciences: 596

APCRP: Aquatic Plant Control Research Program: 381

APEX: Atlantische Passatwind Experiment: See ATEX

API: American Petroleum Institute: 493

API: Associazione Pescicoltori Italiana: 630

APL/JHU: Applied Physics Laboratory, Johns Hopkins University: 435

APL/UW: Applied Physics Laboratory, University of Washington: 390

APO: Advisory Panel for Oceanography: 416

APP: Acoustic Performance Prediction: 395

APOS: Advanced Polar Orbiting Satellite

APT: Automatic Picture Transmission

AQUACOP: Aquaculture Programme du Centre Oceanologique du Pacifique: 617

AREA: Arctic Research in Environmental Acoustics: 398

ARL: Admiralty Research Laboratory: 662

ARL: Arctic Research Laboratory: 398, 421

ARL: Atlantic Regional Laboratory: 602

ARLIS: Arctic Research Laboratory Ice Station: 398

ARP: Antarctic Research Programs: 121, 249 (See also USARP)

ARPA: Advanced Research Projects Agency: 380

ARSOP: Airborne Remote Sensing Oceanography Project: 392

ART: Airborne Radiation Thermometer: 412

ASA: Atlantic Salmon Association: 604

ASBC: American Society of Biological Chemists: 496

ASBPA: American Shore and Beach Preservation Association: 494

ASCAS: Automated System for the Control of Atmospheric Sampling: 311

ASCE: American Society of Civil Engineers: 497

ASDC: Aeronomy and Space Data Center: 375

ASEAN: Association of Southeast Asian Nations: 41

ASWPO: Anti-Submarine Warfare Project Office: 382

ATA: American Tunaboat Association: 506

ATEX: Atlantic Tradewind Experiment: 251

ATWC: Alaska Tsunami Warning Center: 378

ATWS: Alaska Tsunami Warning System: 378

AUTEC: Atlantic Undersea Test and Evaluation Center: 382

AWG: Aquaculture Working Group: 56

AWPPA: Arctic Water Pollution Prevention Act: 602

AWRA: American Water Resources Association: 507

AXBT: Aircraft Expendable Bathythermograph: 315

AZCHERNIRO: Azovsko-Chernomorskiy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii: 661

AZNIIRKH: Azovskiy Nauchno-Issledovatel'skiy Institut Rybnogo Khozyaystva: 661

BACER: Biological and Climatic Effects Research Program: 413

BAH: Biologische Anstalt Helgoland: 620

BALEAR: Baltic Environmental and Acoustic Range: 620

BALTNIRO: Baltiyskiy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii: 661

BARC: Bhabha Atomic Research Centre: 625

BAS: British Antarctic Survey: 662

BATHY: Bathythermograph: 671

BATHY: Bathythermograph report (radio message): 280, 671

BBS: Bermuda Biological Station: 662

BC: Bureau of the Census: 364

BC&GS Bureau of Coast and Geodetic Survey: 649

BCDC: Bay Conservation and Development Commission: 423

BCF: Bureau of Commercial Fisheries: 369, 408, 461

BCIS: Bureau Central International de Seismologie: 129

BDP: Brine Disposal Program: 375

BEA: Bureau of Economics Analysis: 364

BEB: Beach Erosion Board: 381

BEO: Bureau d'Etudes Oceanographiques: 617

BEP: Biological Effects Program: 307

BESEX: Bering Sea Expedition: 255

BESMEX: Bering Sea Marine Mammal Experiment: 371

BESS: Bottom Environmental Sensing System

BF&AR Bureau of Fisheries and Aquatic Resources: 649

BFD: Burma Fisheries Department: 600

BGI: Bureau Gravimetrique International: 109, 130

BGN: Board on Geographical Names: 363

BHI: Bureau Hydrographique International: See IHB

BI: Biologiju Institut: 665

BIBI: Block Island - Fisher Island Range: 397

BIM: Bubble Interfacial Microlayer Sampler: 317

BIMCO: Baltic and International Maritime Conference: 138

BIMBCR: Belle W. Baruch Institute for Marine Biology and Coastal Research: 449

BIO: Bedford Institute of Oceanography: 258, 602

BIOMASS: Biological Investigations of the Marine Antarctic System and Stocks: 121, 122, 256

BIOSHELF: Study of Shelf and Continental Divide: 661

BIOSIS: Biological Sciences Information Service: 515

BIOTALASSA: Study of Oceanological Basis for Bioproductivity of Prospective Open-Ocean Fishing Grounds: 661

BIRD: Banque Internationale pour la Reconstruction et le Developement: See BIRD

BIRF: Banco Internacional de Reconstruccion y Fomento: See IBRD

BIRS: Biology Information Retrieval System: 375

BIWI: Bermuda Inshore Waters Investigation: 662

BIWS: Bureau of International Whaling Statistics: 72

BLIS: Boundary Layer Instrument System: 347

BLM: Bureau of Land Management: 371, 402, 448

BLOS: Bigelow Laboratory for Ocean Sciences: 434

BMBO: Baltic Marine Biology Organization: 138

BMB: Baltic Marine Biologists: 138

BME: Baltimore Maritime Exchange: 512

BMI: Battelle Memorial Institute: 513

BML: Bodega Marine Laboratory: 424

BMLA: British Maritime Law Association: 662

BMRGG: Bureau of Marine Resources, Geology and Geophysics: 596

BNCAR: British National Committee on Antarctic Research: 662

BNCOE: British National Committee on Ocean Engineering: 662

BNCOR: British National Committee on Ocean Research: 662

BNDO: Bureau National des Donnees Oceaniques: 617

BNIO: British National Institute of Oceanography: See NIO

BNL: Brookhaven National Laboratory: 516

BOA: Base Oceanografica Atlantica: 599

BOD: Biological Oxygen Demand

BODS: British Oceanographic Data Service: 662

BOL: Bingham Oceanographic Laboratory: 426

BOM: Base Oceanologique de Mediterranee: 617

BOM: Bottom Ocean Monitor: 317

BOM: Bureau of Mines: 403, 649

BOMAP: Barbados Oceanographic and Meteorological Analysis Project: 345

BOMEX: Barbados Oceanographic and Meteorological Experiment: 345, 375

BOR: Bureau of Outdoor Recreation: 405

BOR: Bureau of Reclamation: 404

BOSA: Board on Ocean Science Affairs: 419

BOSEX: Baltic Open Sea Experiment: 254

CBCES: Chesapeak Bay Center for Environmental Studies: 418, 455

CBF: Chesapeake Bay Foundation: 518

CBI: Chesapeake Bay Institute: 435, 455

CBI: Comision Ballenera Internacional: See IWC

CBL: Chesapeake Biological Laboratory: 435

CBO: Conference of Baltic Oceanographers: 142, 285

CBS: Commission for Basic Systems: 29

CBWCM: Chesapeake Bay Wave Climate Model: 451

CCASTD: Comite Consultatif sur l'Application de la Science et de la Technique au Developpement: See ACAST

CCC: Coastal Coordinating Council: 428

CCCAS: Centro de Cooperacion Cientifica de Asia Sudoriental: See SEASCO

CCCO: Committee on Climatic Changes and the Ocean: 122

CCEA: Center for Climatic and Environmental Assessment: 375

CCEDN: California Coastal Engineering Data Network: 422

CCGD: Canadian Centre for Geoscience Data: 602

CCGLBHHD: Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data: 50

CCHO: Comite Consultatif d'Hydrologie Operationelle: See ACOH

CCIA: Comite Cientifico de Investigaciones Antarticas: See SCAR

CCIO: Comite Cientifico de Investigaciones Oceanicas: See SCOR

CCIW: Canada Centre for Inland Waters: 602

CCML: Centro de Ciencias del Mar y Limnologia: 637

CCMS: Committee on the Challenges of Modern Society: 81

CCO: Canadian Committee on Oceanography: 62

CCO: Comision Colombiana de Oceanografia: 606

CCO: Coordinating Committee on Oceanography: 361

CCOFI: See CALCOFI

CECOLDO: Centro Colombiano de Datos Oceanograficos: 607

CECPI: Commission Europeenne Consultative pour les Peches dans les Eaux Interieures: See EIFAC

CEDDA: Center for Experiment Design and Data Analysis: 375

CEDO: Centro de Datos Oceanograficos: 637

CEDO: Centro Espanol de Datos Oceanograficos: 655

CEDRE: Centre d'Etudes de Documentation, de Recherches, et d'Experimentation: 617

CEE: Comunidad Economica Europea: See EEC

CEE: Controlled Experimental Ecosystem: 305

CEE: Commission Economique pour l'Europe: See ECE

CEEA: Communaute Europeenne de l'Energie Atomique: See EURATOM

CEER: Center for Energy and Environmental Research: 447

CEES: Center for Environment and Estuarine Studies: 435

CEIAC: Coastal Engineering Information and Analysis Center: 381

CEIP: Coastal Energy Impact Program: 368

CEL: Civil Engineering Laboratory: 383

CEMA: Centre d'Etudes Marines Avancees: 617

CEMBS: Committee for European Marine Biological Symposia: 153

CEMFRI: Central Marine Fisheries Research Institute: 625

CENADA: Centro Nacional de Datos Oceanograficos: 637

CENDOC: Centro Nacional de Datos Oceanograficos: 605

CENFAM: Centro Nazionale di Fisica dell'Atmosfera e Meteorologia: 630

CENOP: Cenozoic Paleo-Oceanography

CENTO: Central Treaty Organization: 45

CENTOB: Centre National de Tri d'Oceanographie Biologique: 617

CEOBM: Centre pour l'Etude Oceanographique et Biologique Marine: 617

CEP: Chile-Ecuador-Peru: 89

CEPA: Comision Economica para Africa: See ECA

CEPAL: Comision Economica para America Latina: See ECLA

CEPAL: Commission Economique pour l'Amerique Latine: See ECLA

CEPE: Comision Economica para Europa: See ECE

CEPEM: Centre d'Etude Europeenne pour le Problems de l'Environment Marine: 147

CEPEX: Controlled Ecosystem Pollution Experiment: 305

CEPM: Comite d'Etudes Petrolieres Marines: 617

CEQ: Council on Environmental Quality: 358, 448, 451

CER: Coastal and Estuarine Regimes: 122

CERC: Coastal Engineering Research Center: 381

CERDEM: Centre d'Etudes et de Recherches sur le Droit et l'Environment Marin: 617

CERIC: Committee of Ecological Research for the Inter-oceanic Canal: 419

CERL: Corvallis Environmental Research Laboratory: 413

CERSS: Committee on Earth Resources Satellite Systems: 361

CERTSM: Centre d'Etudes et de Recherches Techniques Sous-Marines: 617

CETAP: Cetacean and Turtle Assessment Program: 448

CETENAL: Comision de Estudios del Territorio Nacional: 637

CFAC: Commercial Fisheries Advisory Committee: 443

CFE: Comision Federal de Electricidad: 637

CFFS: Committee on Food From the Sea: 361

CFMC: Caribbean Fishery Management Council: 369

CG: Coast Guard: See USCG

CGIF: Commission of Game and Inland Fisheries: 451

CGLS: Center for Great Lakes Studies: 453

CGM: Compagnie Generale Maritime: 617

CGMW: Commission on the Geological Map of the World: 181

CGOU: Coast Guard Oceanographic Unit: 412

CGPM: Consejo General de Pesca del Mediterraneo: See GFCM

CGPM: Conseil General des Peches pour la Mediterranee: See GPCM

CHA: Canadian Hydrographers Association: 604

CHO: Commission on the History of Oceanography: 117

CHS: Canadian Hydrographic Service: 602

CHy: Commission for Hydrology: 29

CIAT: Comision Interamericana del Atun Tropical: See IATTC

CIB: Commission Internationale de la Baleine: See IWC

CIBIMA: Centro de Investigacion de Biologia Marina: 595

CICAA: Comision Internacional para la Conservacion del Atun del Atlantico: See ICCAT

CICAR: Cooperative Investigation of the Caribbean and Adjacent Regions: 22, 232, 261, 371

CICARDI: CICAR Data Inventory: 261

CICESE: Centro de Investigacion Cientifica y Educacion Superior de Ensenada: 637

CICTA: Commission Internationale pour la Conservation des Thonides de l'Atlantique: See ICCAT

CIE: Commission Internationale de l'Eclairage: See ICI

CIEA: Centro de Investigacion y Estudios Avanzados: 637

CIEM: Consejo Internacional para la Exploracion del Mar: See ICES

CIEM: Conseil International pour l'Exploitation de la Mer: See ICES

CIESM: Commission Internationale pour l'Exploration Scientifique de la Mer Mediterranee: See ICSEM

CIFA: Committee for Inland Fisheries of Africa: 20

CIG: Comite International de Geophysique: 127, 245

CILOG: Cooperative Investigations of a Large Ocean Gyre: 264

CIM: Cooperative Investigations in the Mediterranean: 22, 64, 240, 245, 262

CIMAR: Centro de Investigaciones del Mar: 605

CIMAS: Cooperative Institute for Marine and Atmospheric Studies: 371

COCIC: Comision Coordinadora de las Investigaciones Cientificas: 89

COD: Chemical Oxygen Demand

CODATA: Committee on Data for Science and Technology: 119

CODC: Canadian Oceanographic Data Center: 602

COE: Corps of Engineers, U.S. Army: 377, 381, 422

COEES: Committee on Ocean Exploration and Environmental Services: 361

COFI: Committee on Fisheries: 19

COFRC: Chevron Oil Field Research Company: 520

COG: Committee on Oceanography and GARP

COGEODATA: Committee on Storage, Automatic Processing, and Retrieval of Geological Data: 116

COI: Comision Oceanografica Intergubernamental: See IOC

COI: Commission Oceanographique Intergouvernementale: See IOC

COIL: Central Oil Identification Laboratory: 412

COLD: Council of Oceanographic Laboratory Directors: 436

COLP: Center for Ocean Law and Policy: 451

COLREGS: International Regulations for Preventing Collisions at Sea

COMEX: Compagnie Maritime d'Expertises: 617

COMS: Center for Ocean Management Studies: 448

COMSED: Continental Margin Sedimentology

CONA: Comite Oceanografico Nacional: 605

CONACYT: Consejo Nacional de Ciencia y Tecnologia: 637

CONAES: Committee on Nuclear and Alternative Energy Sources: 419

CONCAWE: Conservation of Clean Air and Water: 143

CONICET: Consejo Nacional de Investigaciones Cientificas y Tecnicas: 595

CONSED: Continental Shelf Sedimentology

CONSHELF: Continental Shelf: 401

COOP: Cooperative Ocean Observation Program: 391

COP: Centre Oceanologique du Pacific: 617

COPACE: Comite des Peches pour l'Atlantique Centre-Est: See CECAF

COPRAQ: Cooperative Program of Research on Aquaculture: 266

COSAMC: Commission for Special Applications of Meteorology and Climatology: 29

COSMOS: Coast Survey Marine Observation System: 377

COSPAR: Committee on Space Research: 120

COSREL: Task Group on Interagency Coordination, Federal-State Relationships, and Legal Problems: 361

COST: Centre of Oil Spill Technology: 602

COST: Continental Offshore Stratigraphic Test: 409

COST: Cooperation Europeenne dans la Domaine de la Recherche Scientifique et Technique: 56

COWAR: Scientific Committee on Water Research: 123

COW: Committee on Water: 419

CPAC: Coastal Processes Advisory Committee: 442

CPACE: Comite des Peches pour l'Atlantique Centre-Est: See CECAF

CPACO: Comite de Pesca para el Atlantico Centro-Oriental: See CECAF

CPANE: Commission des Pecheries de l'Atlantique Nord-Est: See NEAFC

CPC: Chinese Petroleum Corporation: 658

CPCA: Comite de Pesca Continental para Africa: See CIFA

CPCA: Comite des Peches Continentales pour l'Afrique: See CIFA

CPCERMPS: Comision Permanente para la Conservacion y Exploitacion de los Recursos Maritimos del Pacifico Sur: See PCSP

CPCIP: Commission Permanente de la Convention Internationale des Peches: See PCIFC

CPCMDS: Coastal Plains Center for Marine Development Services: 457

CPDC: Coastal Planning and Development Commission: 429

CRODT: Centre de Recherches Oceanographiques de Dakar-Thiaroye: 653

CROP: Centre de Recherche Oceanographique et des Peches: 594

CRPOCS: Cultural Resources Protection on the Outer Continental Shelf: 406

CRREL Cold Regions Research and Engineering Laboratory: 381

CRS: Congressional Research Service: 355

CRSA: Connecticut River Salmon Association: 459

CRSTIAC: Cold Regions Science and Technology Information Analysis Center: 381

CRWR: Center for Research in Water Resources: 450

CSA: Canadian Shipping Act: 602

CSA: Conseil Scientifique d'Afrique: 87

CSAGI: Comite Special de l'Annee Geophysique Internationale: 245, 289

CSC: Coastal Study Commission: 451

CSCDH: California State College at Dominguez Hills: 424

CSCS: California State College at Stanislaus: 424

CSD: Coast Study Division: 629

CSD: Continental Shelf Discus: 372

CSDC: Convection Subprogramme Data Centre: 347

CSE Committee on the Salmon Emergency: 522

CSI: Coastal Studies Institute: 433

CSIB: Cooperative Synoptic Investigations of the Baltic: 270

CSIR: Council for Scientific and Industrial Research: 654

CSIR: Council of Scientific and Industrial Research: 625

CSIRO: Commonwealth Scientific and Industrial Research Organization: 596

CSK: Cooperative Study of the Kuroshio and Adjacent Regions: 22, 237, 243, 267

CSLP: Center for Short-Lived Phenomena: 418

CSO: Coastal States Organization: 456

CSOP: Coastal Shelf Oceanography Program

CSPBI: Comite Special pour le Programme Biologique International: See SCIBP

CSPE: Comite Scientifique pour les Problems de l'Environnement: See SCOPE

CSRA: Comite Scientifique pour les Recherches Antarctiques: See SCAR

CSRO: Comite Scientifique pour les Recherches Oceaniques: See SCOR

CSS: Coastal Survey Ship

CSSM: Cooperative Study of the Southern Mediterranean: 262

CST: Centro Studi Talassografici: 630

CSUF: California State University at Fresno: 424

CSUF: California State University at Fullerton: 424

CSUH: California State University at Hayward: 424

CSULA: California State University at Los Angeles: 424

CSULB: California State University at Long Beach: 424

CSUN: California State University at Northridge: 424

CSUP: California State University at Pomona: 424

CSUS: California State University at Sacramento: 424

CSUSJ: California State University at San Jose: 424

CSWQB: California State Water Quality Control Board: 422

CSWRCB: California State Water Resources Control Board: 422

CTD: Conductivity-Temperature-Depth

CUA: California Undersea Aquaduct: 404

CUARO: California Undersea Aquaduct Reconnaissance Oceanography: 404

CUE: Coastal Upwelling Experiment: 322

CUEA: Coastal Upwelling Ecosystems Analysis: 60, 286, 322, 445

CUNY: City University of New York: 442

CURV: Cable Controlled Underwater Recovery Vehicle

CWI: Clean World International: 141

CWPCA: Chesapeake Water Pollution Control Association: 519

CWRAC: Coastal Water Resources Advisory Committee: 442

CWS: Canadian Wildlife Service: 602

CWS: Center For Wetland Studies: 433

CYAMEX: Cyana-Mexique: 271

CZCS: Coastal Zone Color Scanner Study: 376

CZM: Coastal Zone Management: 368

CZMA: Coastal Zone Management Act: 368

CZMAC: Coastal Zone Management Advisory Committee: 364

CZMI: Coastal Zone Management Institute: 521

CYRA: Commission's Yellowfin Regulatory Area: 666

DAC: Domestic Annual Fishing Capacity: 666

DAH: Expected Domestic Annual Fishing Harvest: 666

DAM: Direction des Affaires Maritimes: 635

DARPA: Defense Advanced Research Projects Agency: 380

DAXBT: Deep Aircraft Expendable Bathythermograph

DCNR: Department of Conservation and Natural Resources: 420

DCP: Data Collection Platform:

DDC: Defense Documentation Center: 379, 380

DDMIIS: David Davies Memorial Institute of International Studies: 145

DDP: Division de Pesca: 605

DDR: Deutsches Demokratisches Republik: 619

DEC: Department of Environmental Conservation: 442

DEEP FREEZE: Antarctic Research Program: 392

DEIC: Diver Equipment Information Center: 513

DEIS: Draft Environmental Impact Statement: 417

DEMR: Department of Energy, Mines, and Resources: 602

DEN: Direccion de Educacion Naval: 637

DEP: Department of Environmental Protection: 426, 434, 442

DEQ: Department of Environmental Quality: 445

DER: Department of Environmental Research: 446

DESG: Delaware's Sea Grant Program: 427

DEVA: Demonstration, Experimentation, et Valorisation de l'Aquaculture: 617

DFG: Department of Fish and Game: 440

DFG: Deutsches Forschungsgemeinschaft: 620

DFW: Department of Fish and Wildlife: 436

DGCFCP: Direccion General de Capacitacion y Fomento Cooperativo Pesquero: 637

DGOM: Direccion General de Obras Maritimes: 637

DGOP: Direccion General de Obras Portuarias: 608

DGOP: Direccion General de Operacion Portuaria: 637

DGOSM: Direccion General de Oceanografia y Senalamiento Maritimo: 637

DGPPP: Direccion General de Planeacion y Promocion Pesqueras: 637

DGRP: Direccion General de Regiones Pesqueras: 637

DGSFMM: Direccao General dos Servicos de Fomento Maritimo Marinho: 651

DGTP: Direccion General de Tecnologia Pesquera: 637

DHEC: Department of Health and Environmental Control: 448

DHI: Deutsches Hydrographisches Institut: 620

DHI: Decennie Hydrologique Internationale: See IHD

DHM: Directoria Hidrografica Maritima: 652

DHMG: Departmento Hidrografico de la Marina de Guerra: 611

DHN: Direccion de Hidrografia y Navegacion: 648, 664

DHN: Diretoria de Hidrografia e Navegacao: 599

DIAND: Department of Indian Affairs and Northern Development: 602

DIC: Diving Information Center: 395

DIEO: Decennie Internationale d'Exploration des Oceans: See IDOE

DINEKT: Study of Dynamics of Equatorial Currents and Structure of Water: 661

DISHIDRAL: Dinas Hidrografi-Angkatan Laut: 626

DISL: Dauphin Island Sea Laboratory: 420

DKMM: Committee on Marine Science and Technology: 620

DLNR: Department of Lands and Natural Resources: 430

DM: Direccion de Meteorologia: 608

DMA: Defense Mapping Agency: 380

DMA/AC: Defense Mapping Agency/Aerospace Center: 380

DMA/HC: Defense Mapping Agency/Hydrographic Center: 380

DMA/TC: Defense Mapping Agency/Topographic Center: 380

DMI: Danske Meteorologiske Institut: 610

DMN: Direction de la Meteorologie Nationale: 601

DMR: Department of Marine Resources: 434

DMRP: Dredged Material Research Program: 381

DMS: Department of Marine Science: 433

DMS: Department of Marine Sciences: 447

DNA: Designated National Agency: 670

DND: Department of National Defense: 602

DNP: Declared National Program: 670

DNPM: Departmento Nacional de Producao Mineral: 599

DNR: Department of Natural Resources: 428, 432, 435, 437, 438, 444, 448, 453

DNRCD: Department of Natural Resources and Community Development: 443

DNREC: Department of Natural Resources and Environmental Control: 427

DO: Dissolved Oxygen

DOA: Department of the Army: 380

DOC: Department of Commerce: 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379

DOC: Department of Conservation: 431, 433

DOD: Department of Defense: 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399

DOD: Deutsches Ozeanographisches Datenzentrum: 620

DOE: Department of Ecology: 452

DOE: Department of Energy: 399, 602

DOE: Department of Environment: 597

DOE: Department of the Environment: 171

DOF: Department of Fisheries: 452

DOI: Department of Interior: 401, 402, 403, 404, 405, 406, 407, 408, 409

DOMB: Deep Ocean Moored Buoy: 372

DOMES: Deep Ocean Mining Environmental Study: 364, 371

DOMO: Deep Ocean Mining Operations: 371

DON: Department of the Navy: 372, 376, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399,

DOOM: Deep Ocean Optical Measurement Program: 393

DOPM: Direction d'Oceanographie et des Peches Maritimes: 653

DORIS: Societe de Development Operationel des Richesses: Sous-Marines: 617

DOS: Department of State: 410

DOSP: Deep Ocean Sediment Probe

DOT: Deep Ocean Technology

DOT: Department of Transportation: 411, 412

DOTD: Department of Transportation Development: 433

DOTS: Dredging Operations Technical Support: 38

DOUDDAS: Deep Ocean Untended Digital Data Acquisition System

DOWB: Deep Ocean Work Boat

DPED: Department of Planning and Economic Development: 430

DPH: Department of Public Health: 420

DPPO: Deepwater Ports Project Office: 375

DRB: Defense Research Board: 602

DRBC: Delaware River Basin Commission: 362

DREA: Defense Research Establishment - Atlantic: 602

DREO: Defense Research Establishment - Ottawa: 602

DREP: Defense Research Establishment - Pacific: 602

DRV: Deep Research Vessels

DSA: Spectro-Angular Density Method of Forecasting Ocean Waves

DSDP: Deep Sea Drilling Project: 97, 295, 416, 424

DSE: Defense Scientific Establishment: 642

DSIR: Department of Scientific and Industrial Research: 642

DSL: Deep Scattering Layer

DSRV: Deep Submergence Rescue Vehicle

DSSF: Department of Sea and Shore Fisheries: 433

DSSV: Deep Submergence Search Vehicle

DST: Data Systems Test (GARP): 346

DSXBT: Deep Surface Expendable Bathythermograph

DTMB: David Taylor Model Basin: 396

DTP: Department of Transport and Power: 628

DUIOS: Dalhousie University Institute of Ocean Sciences: 603

DUMAND: Deep Underwater Muon and Neutrino Detection: 372

DUML: Duke University Marine Laboratory: 443

DVRPC: Delaware Valley Regional Planning Commission: 446

DWICA: Deep Water Isotopic Current Analyzer: 399

DWP: Deep Water Ports: 381, 411, 412, 471

DWPA: Deepwater Ports Act: 412

DWS: Deutsches Wetterdienst Seewetteramt: 620

EAC: East Australian Current: 252

EAC: East African Community: 53

EQUAPAC: Cooperative Survey of the Equatorial Zone of the Pacific Ocean: 269

ERAP: Earth Resources Aircraft Program: 415

ERDA: Energy Research and Development Administration: 399

ERDC: Earth Resources Data Center: 437

ERDI: Energy Research and Development Inventory: 399

ERF: Estuarine Research Federation: 527

ERFEN: Estudio Regional del Fenomeno El Nino: 89

ERIM: Environmental Research Institute of Michigan: 437

ERL: Environmental Research Laboratories: 370, 371, 378

EROS: Earth Resources Observation Satellite: 409

ERRDF: Earth Resources Research Data Facility: 415

ERSPRC: Earth Resources Survey Program Review Committee

ERTS: Earth Resources Technology Satellite: 415

ES: Environmental Services: 602

ESA: Ecological Society of America: 526

ESA: Endangered Species Act of 1973: 369

ESA: European Space Agency: 57

ESCAP: Economic and Social Commission for Asia and the Pacific: 12, 37

ESCMTA: Escuela Superior de Ciencias Maritimas y Technologia de Alimentos: 637

ESIA: Escuela Superior de Ingenieria y Arquitectura: 637

ESIC: Environmental Science Information Center: 375, 418

ESIME: Escuela Superior de Ingenieria Mecanica y Electrica: 637

ESO: Escuela Superior de Oceanografia: 637

ESPADON: Etudes des Moyens Spatiaux et Aeriens de l'Ocean: 617

ESRO: European Space Research Organization: 617

ESSA: Environmental Science Services Administration: 367, 371, 375, 377, 378

ETCC: Estuarine Technical Coordination Committee

EUBS European Undersea Biomedical Society: 155

EUC: Equatorial Undercurrent

EURATOM: European Atomic Energy Community: 55

EUROCEAN: European Oceanic Association: 154

EUROPECHE: Association of National Organizations of Fishing Enterprises of the EEC: 56

EVE: Economic Verification Experiments: 376

EWCFI: East West Center Food Institute: 430

EY: Equilibrium Yield

F&WA: Fish and Wildlife Administration: 435

FAC: Foreign Allowable Catch: 666

FAGS: Federation of Astronomical and Geophysical Services: 109, 128, 129, 130, 131, 132

FAMOS: Fleet Applications of Meteorological Observations from Satellites

FAMOUS: French-American Mid-Ocean Undersea Study: 94, 271, 316, 398

FAMU: Florida A&M University: 428

FAO: Food and Agriculture Organization of the United Nations: 1, 7, 8, 16, 17, 18, 19, 20, 35, 36, 38, 62, 165, 230, 233, 237, 239, 261, 262, 265, 272, 283, 290, 293, 325, 326, 331, 369

FASOR: Forward Area Sonar Research

FAU: Florida Atlantic University: 428

FBS: Fisheries Board of Sweden: 657

FCCSET: Federal Coordinating Council for Science, Engineering, and Technology: 361

FCECA: Fishery Committee for the Eastern Central Atlantic: 20

FCMA: Fisheries Conservation and Management Act of 1976: 369, 412, 665

FCRG: Food Chain Research Group: 424

FCST: Federal Council for Science and Technology: 361

FCZ: Fisheries Conservation Zone: 369

FCZ: Fisheries Conservation Zone: 369

FD: Fisheries Department: 646

FDA: Food and Drug Administration: 400

F DRAKE: First Dynamic Response and Kinematics Experiment in the Drake Passage: 313

FDC: Fishery Data Centre: 16, 233

FEA: Federal Energy Administration: 369

FEL: Fisheries Engineering Laboratory: 369

FEPE: Federation Europeenne pour la Protection des Eaux: See EFPW

FEPI: Fideicomiso para la Educacion Pesquera Integral: 637

FFESSM: Federation Francaise d'Etudes et des Sports Sous-Marins: 617

FfIK: Forschungsstelle fuer Insel- und Kustenschutz: 620

FFIU: Forsvarets Forskningsinstitutt Avdeling for Unter-vannskrigsforskning: 645

FGGE: First GARP Global Experiment: 272, 315, 346, 372

FGORC: Flower Garden Ocean Research Center: 450

FHI: Fiskeridirektoratet Havforskningsinstitutt: 645

FIBEX: First International BIOMASS Experiment: 256

FICSAS: Federation of Institutions Concerned with the Study of the Adriatic Sea: 156

FIDEFA: Fideicomiso Par el Desarrollo de la Fauna Acuatica: 637

FIG: Federation Internationale des Geometres (International Federation of Surveyors): 180

FIO: Florida Institute of Oceanography: 428

FISCOR: Fisheries Development Corporation: 654

FISSHH: First International Saturation Study of Herring and Hydroacoustics: 276

FIU: Florida International University: 428

FLARE: Florida Aquanaut Research Expedition: 372

FLASH: Foreign Fishing Vessel Licensing and Surveillance Hierarchial Information System: 402

FLEX Fladden Ground Experiment: 298

FLIP: Floating Instrument Platform: 424

FLLCL: Francis L. LaQue Corrosion Laboratory: 541

FLOOD: Fleet Observation of Oceanographic Data: 392

FLORIS: Florida Resources Information System: 428

FLSCN: Fundacion La Salle de Ciencias Naturales: 664

FMANU: Federation Mondiale des Associations pour les Nations Unies: See WFUNA

FMC: Federal Maritime Commission: 414

FMD: Fiji Marine Department: 615

FMS: Fisheries and Marine Service: 602

FNAF: Farvandsdirektoratet Nautisk Afdeling: 610

FNPP: Floating Nuclear Power Plant Study: 358

FNOC: Fleet Numerical Oceanographic Center: 391

FNWC: Fleet Numerical Weather Central: 391

FNWF: Fleet Numerical Weather Facility: 391

FOEMP: Federal Oceanic Exploration Mapping Program

FOIL: Field Oil Identification Laboratory: 412

FOP: Federal Ocean Program: 361

FOR: Foundation for Ocean Research: 531

FOSI: Florida Ocean Sciences Institute: 530

FOSTG: Freedom for Ocean Sciences Task Group: 419

FOY: FGGE Operational Year: 346

FPC: Federal Power Commission: 399

FPC: Fish Protein Concentrate: 13, 23

FRB: Fisheries Research Board of Canada: 602

FRDA: Fisheries Research and Development Agency: 633

FRS: Fisheries Research Station: 662

FSDB: Fishery Statistics Data Base: 369

FSFRL: Far Seas Fisheries Research Laboratory: 632

FSU: Florida State University: 428

FTU: Fishery Technical Unit: 629

GISMER: Groupe d'Intervention sous la Mer: 617

GIWW: Gulf Intracoastal Waterway

GLBC: Great Lakes Basin Commission: 362

GLC: Great Lakes Commission: 460

GLERL: Great Lakes Environmental Research Laboratory: 371, 377

GLFC: Great Lakes Fishery Commission: 58

GLMWC: Great Lakes and Marine Waters Center: 437

GLO: General Land Office: 450

GLOMEX: Global Oceanographic and Meteorological Experiment: 345

GLRD: Great Lakes Research Division: 437

GLRIRC: Great Lakes Regional Information and Referral Center: 373

GMEI: Gulf of Mexico Estuarine Inventory: 461

GLSG: Great Lakes Study Group: 157

GMFMC: Gulf of Mexico Fishery Management Council: 369

GMI: Global Marine Incorporated: 534

GNEM: Global Network for Environmental Monitoring: 277

GOCC: GATE Operational Control Centre: 347

GOES: Geostationary Operational Environmental Satellite: 372, 275, 376, 378, 415

GOES/DCP: GOES Data Collection Platform

GOFAR: Global Geological and Geophysical Ocean Floor Analysis and Research: 392

GOG: GEOSECS Operations Group: 306

GOIN: Gosudarstvennyy Okeanograficheskiy Institut: 661

GOO: Get the Oil Out: 423

GOS: Global Observing System: 353

GOSSTCOMP: Global Ocean Sea Surface Temperature Computation: 376

GOY: GWE Operational Year: See FOY

GPI: Geologisch-Paleontologisches Institut: 620

GPRC: Geophysical and Polar Research Center: 453

GRDL: Geodetic Research and Development Laboratory: 377

GRZ: Galapagos Rift Zone

GSA: Geological Society of America: 532

GSA: Geophysical Sciences Association: 533

GSC: Geological Survey of Canada: 602

GSFC: Goddard Space Flight Center: 415

GSJ: Geological Survey of Japan: 632

GSMFC: Gulf States Marine Fisheries Commission: 308

GSO: Graduate School of Oceanography: 448

GTC: Group for Technical Coordination: 262

GTS: Global Telecommunication System: 353

GTS: Guinean Trawling Survey: 87, 283

GU: Goteborgs Universitet: 657

GUFEX: Gulf Underwater Flare Experiment: 308

GURC: Gulf Universities Research Corporation: 439, 462

GWE: Global Weather Experiment: See FGGE

HARSAP: Harbor Survey Assistance Program: 392

HCB: High Capability Buoy

HCRS: Heritage Conservation and Recreation Service: 405

HD: Hydrographic Department: 636, 646, 662

HDMSA: Hydrographic Department of the Maritime Safety Agency: 632

HEC: Hydraulic Engineering Center: 381

HEIAC: Hydraulic Engineering Information Analysis Center: 381

HERL: Health Effects Research Laboratory: 413

HESL: Hawaii Environmental Simulation Laboratory: 430

HEW: Department of Health, Education, and Welfare: 400

HIG: Hawaii Institute of Geophysics: 430

IPHC: International Pacific Halibut Commission: 70

IPIECA: International Petroleum Industries Environmental Conservation Association: 192, 206

IPLAN: Joint IOC/WMO Planning Group for IGOSS: 39

IPN: Instituto Politecnico Nacional: 637

IPOD: International Phase of Ocean Drilling: 97, 295

IPON: Task Group on Identification of Problems, Opportunities, and Needs, Existing and Potential: 361

IPqM: Instituto de Pesquisas da Marinha: 599

IPSFC: International Pacific Salmon Fisheries Commission: 71

IPU: Inter-Parliamentary Union: 199

IPU: International Paleontological Union: 191

IRA: Istituto di Ricerca sulle Acque: 630

IRC: International Research Council: 100

IRCCOPR: Inter-Research Council Committee on Pollution Research: 662

IRCM: Institutul Romin de Cercetari Marine: 652

IRES: IOC Group of Experts on Oceanographic Research as it Relates to IGOSS: 39

IRIA: Infrared Information Analysis Center: 437

IRIS: National Infrared Information System: 437

IRIS: Interactive Real-time Information System: 322

IRL: Information Retrieval Limited: 230

IRLS: Interrogation, Recording, and Location System

IRPTC: International Register of Potentially Toxic Chemicals: 272

IRS: International Referral System: See INFOTERRA

IRT: Infrared Radiation Thermometer

IRVSS: Infrared Vertical Sounding System

ISA: Instrument Society of America: 540

ISAR: Inter-Seamount Acoustic Range: 382

ISB: International Society of Biometeorology: 189

IWGMS: Intergovernmental Working Group on Monitoring or Surveillance: 8

IWP: Indicative World Plan for Agriculture: 331

IWR: Institute for Water Resources: 381

IWR: Institute of Water Resources: 421

IWRA: International Water Resources Association: 198

IWSOE: International Weddell Sea Oceanographic Expedition: 296

JAERI: Japan Atomic Energy Research Institute: 632

JAMARC: Japan Marine Fishery Resource Center: 632

JAMSTEC: Japan Marine Science and Technology Center: 632

JARE: Japanese Antarctic Research Expedition: 632

JASIN: Joint Air/Sea Interaction Project: 281

JCFC: Japan-China Joint Fisheries Commission: 73

JEL: Jackson Estuarine Laboratory: 440

JFA: Japan Fishery Agency: 632

JGE: Joint Group of Experts

JHU: Johns Hopkins University: 435

JIC: Joint Ice Center: 367

JICG: Joint International Coordination Group

JIMAR: Joint Institute for Marine and Atmospheric Research: 371

JISAO: Joint Institute for the Study of the Atmosphere and the Ocean: 371

JISETA: Joint Investigation of the Southeastern Tropical Atlantic: 2

JKFC: Japan-Korea Joint Fisheries Commission: 74

JMA: Japan Meteorological Agency: 632

JMS: Japanese Meteorological Society: 632

JMSA: Japanese Maritime Safety Agency: 632

JMSDF: Japan Maritime Self Defense Force: 632

JOC: Joint Organizing Committee for GARP: 30, 343, 352

JODC: Japan Oceanographic Data Center: 237, 267, 632

JOIDES: Joint Oceanographic Institutions for Deep Earth Sampling: 295, 424

JOINT: (Joint CUEA Programs): 322

JONSDAP: Joint Oceanographic North Sea Data Acquisition Program: 298

JONSIS: Joint North Sea Information System: 298

JONSMOD: Joint North Sea Modeling Group: 298

JONSWAP: Joint North Sea Wave Analysis Project: 299

JPMOC: Joint Polymode Organizing Committee: 314

JSFC: Japanese-Soviet Fish Commission: 75

JTRE: Joint Tsunami Research Effort: 371

JWIC: Japanese Whaling Information Center: 632

KAE: Krupp Atlas - Elektronik: 620

KASPNIIRKH: Kaspiyskiy Nauchno-Isseldovatel'skiy Institut Rybnogo Khozyaystva: 661

KDC: Kuroshio Data Centre: 237, 267, 632

KMDH: Dienst Hydrografie der Koninklijke Marine: 640

KMIDC: Korea Marine Industry Development Corporation: 633

KMOJMA: Kobe Marine Observatory/Japan Meteorological Agency: 632

KNAW: Konenklijke Nederlandse Adademie van Wetenschappen: 640

KNMI: Koninklijk Nederlands Meteorogisch Instituut: 640

KU: Kagoshima University: 632

KUIMB: Karachi University Institute of Marine Biology: 646

LACCMR: Louisiana Advisory Commission on Coastal and Marine Resources: 433

LACIMAR: Laboratorio de Ciencias do Mar: 599

LAGEMAR: Laboratorio de Geologia Marinha: 599

LAGEOS: Laser Geodynamics Satellite: 415

LAN: Laboratorio di Automozione Navale: 630

LANBY: Large Automatic Navigation Buoy

LANDSAT: Land Monitoring Satellite: 415

LAS: League of Arab States: 77

LASCO: Latin America Science Cooperation Office: 21

LBJSC: Lyndon B. Johnson Space Center: 415

LBL: Lawrence Berkeley Laboratory: 424

LC: Library of Congress: 355

LCB: Limited Capability Buoy

LDE: Local Dynamics Experiment: 314

LDGO: Lamont-Doherty Geological Observatory: 397, 442

LEAC: Lake Erie Advisory Committee: 442

LEG: Legal Questions Relating to Scientific Investigations in the Ocean: 22

LEPOR: Long-term and Expanded Program of Oceanic Exploration and Research: 22, 212, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324

LGAO: Laboratoire de Geophysique Appliquee a l'Oceanographie: 617

LGM: Laboratorio per la Geologia Marina: 630

LGO: Lamont Geological Observatory: 442

LIBEC: Light Behind Camera System: 398

LLL: Lawrence Livermore Laboratory: 424

LLOE: Look Laboratory of Ocean Engineering: 430

LNB: Large Navigation Buoy

LOCO: Long Cores Drilling Program

LON: Lembaga Oseanologi Nasional: 336, 626

LOOP: Louisiana Offshore Oil Port: 433

LOP: Laboratoire D'Oceanographie Physique: 617

LORAN: Long Range Aid to Navigation

LOS: Law-of-the-Sea: 2

LOSC: Law-of-the-Sea Conference: See UNCLOS

MAFMC: Mid-Atlantic Fishery Management Council: 369

MAFOR: Marine Forecast

MAINLOBE: Major Investigation for Low-Frequency Ocean Bottom Loss Experiments: 397

MAM: Joint II March-May Study: 322

MAMBO: Mediterranean Association of Marine Biology and Oceanography: 200, 262

MAMOS: Marine Automatic Meteorological Observing Station

MAMS: Marine Meteorological Services

MANOP: Manganese Nodule Program: 317

MAOA: Meteorological Aspects of Ocean Affairs: 28, 225, 668

MAP: Marine Advisory Program: 373

MAP: Mediterranean Action Plan: 8

MAPMOPP: Marine Pollution (Petroleum) Monitoring Pilot Project: 280

MA: Marineamt, Abteilung Geophysik: 620

MARAD: Maritime Administration: 364, 365

MARC: Monitoring and Assessment Research Centre: 241

MARCHILE: Chilean Oceanographic Expedition: 605

MAREP: Marine Environmental Prediction: 361

MARIC: Marine Resources Information Center: 436

MARISAT: Maritime Satellite System

MARLAGS: Marine Life and Geochemical Studies: 371

MARMAP: Marine Resources Monitoring, Assessment, and Prediction: 369

MARPDIC: Marine Pollution Documentation and Information Center: 662

MARPEP: Marine Environmental Prediction Service: 361

MARPOLMON: Sub-Group of Experts on Marine Pollution Monitoring: 39

MARS: Marine Reporting Station Program: 412

MAS: Marine Advisory Service: 373

MASGP: Mississippi-Alabama Sea Grant Program: 439, 464

MASID: Marine Science Division: 540

MATWAS: Marine Automatic Telephone Weather Answering Service

MAW: Ministry of Agriculture and Works: 646

MAWPCC: Mississippi Air and Water Pollution Control Commission: 439

MBA: Marine Biological Association: 662

MBAI: Marine Biological Association of India: 439

MBI: Marine Biomedical Institute: 450

MBL: Marine Biological Laboratory: 543

MBSHC: Mediterranean and Black Sea Hydrographic Commission: 78

MBT: Mechanical Bathythermograph

MCBSF: Mixed Commission for Black Sea Fisheries: 79

MCCF: Mixed Commission for Cooperation in Marine Fishing: 80

MD: Meteorological Department: 646

MDE: Mooring Dynamics Experiment: 372

MDEP: Marine Department of Environmental Protection: 434

MDJMA: Marine Department/Japan Meteorological Agency: 632

MDSSF: Marine Department of Sea and Shore Fisheries: 434

MEA: Marine Environmental Activities

MEB: Moderate Environment Buoy

MECLI: Marine Environmental Council of Long Island: 442

MED I, II,...X: Mediterranean Pollution Study Pilot Projects: 326

MEDPOL: Mediterranean Pollution Monitoring and Research Program: 8, 326

MEDI: Marine Environmental Data Information Referral System: 22, 239

MEDIPROD: CNRS Group: 617

MEDOC: Mediterranenan Occidental Survey: 327

MEDS: Marine Environmental Data Service: 602

MEMO: Marine Environmental Management Office: 390

MEMS: Marine Education Materials System: 451

MEPC: Marine Environment Protection Committee: 25

MEQ: Marine Environmental Quality

MERRMS: Marine Environment and Resources Research and Management System: 451

MES: Maryland Environmental Services: 435

MESA: Marine Ecosystems Analysis: 371

MESC: Marine Environmental Science Consortium: 420

MESCAL: (Study of Upwelling off Baja California, Mexico, and the coast of Southern California): 286, 322

MESTA: Marine Ecosystem Study in Tropical Areas: 324

METO: Meteorological Office: 662

METOC: Meteorology and Oceanography Centre: 602

MEY: Maximum Economic Yield: 666

MGFC: Mississippi Game and Fish Commission: 439

MGM: Meteoroloji Genel Mudurlugu: 659

MGS: Marine Geophysical Survey

MGU: Moskovskiy Gosudarstvenniy Universitet: 661

MI: Meteorologisk Institut: 645

MIA: Marine Industries Association: 544

MIAS: Marine Information and Advisory Service: 662

MICHU: University of Michigan: 437

MICHUSG: University of Michigan Sea Grant Program: 437

MIDAS: Marine Industry Advisory Service: 436

MIDAS: Meteorological Integrating Data Acquisition System: 311

MILE: Mixed Layer Experiment: 445

MILOC: Military Oceanographic Survey: 81

MIM: Marine Information Management: 22

MIR: Morski Instytut Rybacki: 650

MIT: Massachusetts Institute of Technology: 436

MITSG: Massachusetts Institute of Technology Sea Grant: 436

MIZPAC: Marginal Sea Ice Zone Pacific: 390

MLCB: Moored Limited Capability Buoy:

MLML: Moss Landing Marine Laboratories: 424

MLT: Mean Low Tide

MLW: Mean Low Water

MM&F: Merchant Marine and Fisheries Committee: 354

MMA: Marine Mammal Act of 1972: 360

MMAS: Minnesota Marine Advisory Service: 438

MMC: Marine Mammal Commission: 360

MMCC: Mississippi Marine Conservation Commission: 439

MME: Ministerio de Minas e Energia: 599

MML: Mote Marine Laboratory: 548

MMOJMA: Maizuru Marine Observatory/Japan Meteorological Agency: 632

MMPA: Marine Mammal Protection Act: 360, 369

MMSC: Mediterranean Marine Sorting Center: 240, 262

MMSP: Multinational Marine Science Project: 88

MMSS: Marine Meteorological Services System: 668

MMTC: Marine Minerals Technology Center: 371

MN: Meteorologie Nationale: 617

MNHM: Museum National d'Histoire Naturelle: 617

MOCS: Multi-Channel Ocean Color Sensor

MODE: Mid-Ocean Dynamics Experiment: 314, 588

MONEX: Monsoon Experiment: 348

MONSOON 77: MONEX Subprogramme: 348

MOOS: Modular Ocean Observation System

MOP: Marine Option Program: 430

MOP: Ministerio de Obras Publicas: 643

MOPS: Marine Oil Pick-up Service

MOSES: Manned Open Sea Experimentation Station: 430

MOST: Mobile Sonar Technology: 390

MOST/TDIS: Mobile Sonar Technology/Technical Document Information System: 390

MP: Ministerio de Pesqueria: 648

MPC: Marine Protein Concentrate: See FPC

MPCC: Malta Pollution Control Center: 238

MPEDA: Marine Products Export Development Authority: 625

MPI: Marine Protein Industries: 545

MPL: Marine Physical Laboratory: 424

MPMAC: Marine Petroleum and Minerals Advisory Committee: 364

MPMG: Marine Pollution Management Group: 662

MPML: Mid-Pacific Marine Laboratory: 399

MPMRP: Mediterranean Pollution Monitoring and Research Programme: 326

MPRSA: Marine Protection, Research, and Sanctuaries Act of 1972: 368

MRC: Marine Research Center: 443, 603

MRC: Marine Research Committee: 422

MRC: Marine Resources Council: 361

MRDF: Marine Resources Development Foundation: 546

MRECC: Marine Resources and Engineering Coordinating Committee: 95

MREDA: Marine Resources and Engineering Development Act of 1966: 359, 361

MRF: Marine Recreational Fishing: 666

MRI: Marine Research Institute: 624

MRIS: Maritime Research Information Service: 419

MRL: Marine Research Laboratory: 428

MRRI: Marine Resources Research Institute: 448

MSC: Marine Science Council: 361

MSC: Marine Sciences Center: 441

MSC: Marine Sciences Consortium: 441, 463

MSC: Military Sealift Command: 385

MSCT: Marine Science Contents Tables: 230

MSD: Marine Sciences Directorate: 602

MSES: Marine Scientific Equipment Service: 662

MSI: Marine Sciences Institute: 424, 426, 450

MSIS: Marine Safety Informations System: 412

MSL: Mean Sea Level

MSMA: Meteorological Services to Marine Activities: 668

MSRC: Marine Sciences Research Center: 442

MSRL: Marine Sciences Research Laboratory: 603

MSS: Medium Survey Ship

MSS: Modelling and Simulation Studies: 371

MSS: Moored Surveillence System

MSS: Multispectral Scanner

MSTS: Military Sea Transportation Service: 385

MSU: Mississippi State University: 439

MSY: Maximum Sustainable Yield: 666

MTD V-1: Mirovoy Tsentr Dannykh V-1: 661

MTF: Mississippi Test Facility: 372

MTS: Marine Technology Society: 538, 547

MU: Mie University: 632

MUA: Manned Underwater Activity: 372

MUL: Manned Underwater Laboratories: 372

MUMMERS: Manned-Unmanned Environmental Research Station: 580

MUN: Memorial University of Newfoundland: 603

MUS: Manned Underwater Station: 372

MUS&T: Manned Undersea Science and Technology: 372

MWDI: Master Water Data Index: 409

NAS/OSB: National Academy of Sciences/Ocean Sciences Board: 419

NAS/TRB: National Academy of Sciences/Transportation Board: 419

NASA: National Aeronautics and Space Administration: 375, 415

NASA: North American Salmon Association: 604

NASC: North American Salmon Council: 569

NASCO: National Scientific Committee on Oceanography: 419

NASEPA: National Association of State Environmental Programs Agencies: 550

NASOH: North American Society for Oceanic History: 570

NASRC: North Atlantic Salmon Research Center: 171

NASW: North American Slope Water

NAT: Joint ICES/ICNAF/IOC Coordinating Group for the Systematic Studies of the North Atlantic: 226

NATCO: National Coordinator: 670

NATES: National Analysis of Trends in Emergency Systems: 602

NATO: North Atlantic Treaty Organization: 81, 231, 260

NAUI: National Association of Underwater Instructors: 551

NAVDAB: Navy Ocean Experimental Acoustic Data Bank: 390

NAVF: Norges Almenirlenskapelige Forskningsrad: 645

NAVOCEANO: Naval Oceanographic Office: 258, 375, 380, 391, 392

NAWDEX: National Water Data Exchange: 409

NBIP: National Biomonitoring Inventory Program: 399

NBL: Naval Bioscience Laboratory: 398

NBS: National Bureau of Standards: 366

NC: Nordic Council: 201

NCA: National Canners Association: 552

NCAR: National Center for Atmospheric Research: 416

NCC: National Climatic Center: 315, 375

NCEL: Naval Civil Engineering Laboratory: 383

NCET: National Coastal Ecosystems Team: 408

NCIC: National Cartographic Information Center: 409

NCIC: Northwest Coastal Information Center: 373

NCMB: Nordic Council for Marine Biology: 202

NCMC: National Coalition for Marine Conservation: 553

NCMRED: National Council on Marine Resources and Engineering Development: 359, 361

NCOCM: North Carolina Office of Coastal Management: 443

NCOG: Nederlands Centrum voor Oceanografische Gegevens: 640

NCPRP: National Coastal Pollution Research Program: 413

NCSL: Naval Coastal Systems Laboratory: 387

NCSU: North Carolina State University: 443

NCZO: Nederlands Commissie voor Zee-Onderzoek: 640

NDBDP: National Data Buoy Development Project: 372

NDBO: NOAA Data Buoy Office: 372

NDBP: National Data Buoy Program: 372

NEADS: Northeast Atlantic Dynamics Studies: 122, 328

NEAFC: Northeast Atlantic Fisheries Commission: 65, 82

NEC: North Equatorial Current

NECAP: New England Coastal Area Planning: 436

NECC: North Equatorial Countercurrent

NECCRF: New England Cooperative Coastal Research Facility: 436

NEDIS: National Environmental Data and Information Service: 375

NEELS: National Emergency Equipment Locator System: 602

NEERS: New England Estuarine Research Society: 466, 510

NEFC: Northeast Fisheries Center: 369

NEFDP: New England Fisheries Development Program: 467

NEFMC: New England Fishery Management Council: 369

NEFSC: New England Fisheries Steering Committee: 467

NFI: National Fisheries Institute: 556

NFMOA: National Fish Meal and Oil Association: 555

NFNWF: Navy Fleet Numerical Weather Facility: 391

NGDC: National Geophysical Data Center: 375

NGIC: National Geodetic Information Center: 377

NGO: Non-Governmental Organization

NGSDC: National Geophysical and Solar-Terrestrial Data Center: 375

NHA: Nordic Hydrological Association: 203

NHC: National Hurricane Center: 378

NHD: Naval Hydrographic Depot: 600

NHEML: National Hurricane and Experimental Meteorology Laboratory: 371

NHO: Naval Hydrographic Office: 625

NHRFRL: Nihonkai Regional Fisheries Research Laboratory: 632

NHRKH: Nauchno-Issledovatel'skiy Institut Rybnogo Khozyaystva: 661

NICRAD: Navy/Industry Cooperative Research and Development Program: 382

NIMSCO: NODC Index to Instrument Measured Subsurface Current Observations: 375

NIO: National Institute of Oceanography: 234

NIOMR: Nigerian Institute for Oceanography and Marine Research: 644

NIOZ: Nederlands Instituut voor Onderzoek der Zee: 640

NIPR: National Institute of Polar Research: 632

NJDEP: New Jersey Department of Environmental Protection: 441

NMAS: National Marine Advisory Service: 373

NMC: Naval Missile Center

NMC: National Meteorological Center: 378, 668

NMEA: National Marine Education Association: 557

NMFS: National Marine Fisheries Service: 276, 287, 297, 369, 412

NMI: National Maritime Institute: 662

NML: Narragansett Marine Laboratory: 448

NMNH: National Museum of Natural History: 418

NMOJMA: Nagosaki Marine Observatory/Japan Meteorological Agency: 632

NMRC: National Maritime Research Center: 365

NMU: National Maritime Union: 558

NMWQL: National Marine Water Quality Laboratory: 413

NNHO: Nigerian Navy Hydrographic Office: 644

NOA: National Oceanographic Association: 559

NOA: National Oceanography Association: 559

NOAA: National Oceanic and Atmospheric Administration: 236, 359, 361, 364, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 398, 418

NOC: National Oceanographic Center: 280

NOD: Norsk Oceanografisk Datasenter: 645

NODC: National Oceanographic Data Center: 261, 268, 280, 282, 283, 287, 315, 375, 670

NOIA: National Ocean Industries Association: 559

NOIC: National Oceanographic Instrumentation Center: 372

NOK: Norsk Oseanografisk Komite: 645

NOL: Naval Ordnance Laboratory: 393

NOMAD: Automatic Oceanographic and Meteorological Observation Buoy

NOMES: New England Offshore Mining Experiment Study: 371

NOO: Naval Oceanographic Office: 392

NOP: National Ocean Program: 361

NOP: National Oceanographic Program: 670

NOPS: National Ocean Policy Study: 354

NORDA: Naval Ocean Research and Development Activity: 398

NORDCO: Newfoundland Oceans Research and Development Corporation: 604

NORFISH: North Pacific Fisheries Project: 452

NOROIS: Navires Oceanographiques de Recherches, d'Observation, d'Intervention, et de Soutien: 617

NORPAC: Cooperative Survey of the Northern Pacific: 268

NORPAX: North Pacific Experiment: 315

NORSWAM: North Sea Wave Model: 299

NORWESTLANT: Northwestern Atlantic Environmental Study: 329

NOS: National Ocean Survey: 372, 374, 377

NOSC: Naval Ocean Systems Center: 390

NOSTS: National Ocean Survey Tide Station: 377

NOTS: Naval Ordnance Test Station: 390

NPA: Nigerian Port Authority: 644

NPC: National Petroleum Council: 401

NPC: National Processing Centre: 347

NPDES: National Pollutant Discharge Elimination System: 413

NPFMC: North Pacific Fishery Management Council: 369

NPFSC: North Pacific Fur Seal Commission: 83

NPGS: Naval Postgraduate School: 394

NPS: National Park Service: 406

NPS: Naval Postgraduate School: 394

NRC: National Referral Center: 355

NRC: National Research Council: 419

NRC: National Response Team: 412

NRC: Natural Resources Council: 434

NRC: Nuclear Regulatory Commission: 417

NRCC: National Research Council of Canada: 602

NRCC: Northwest Regional Calibration Center: 372, 452

NRFRL: Nansei Regional Fisheries Research Laboratory: 632

NRI: Natural Resources Institute: 435

NRIO: National Research Institute for Oceanography: 654

NRL: Naval Research Laboratory: 398

NUWC: Naval Undersea Warfare Center: 390

NUWRES: Naval Underwater Weapons Research and Engineering Station: 397

NWAFC: Northwest and Alaska Fisheries Center: 369

NWDC: National Wildlife Defense Council: 565

NWF: National Wildlife Federation: 560

NWFC: Northwest Fisheries Center: 369

NWOFC: Numerical Weather and Oceanographic Forecasting Center

NWPO: Northwest Pacific Oceanographers: 572

NWQSS: National Water Quality Surveillance System: 413

NWRC: National Weather Records Center: 375

NWRF: Navy Weather Research Facility: 375

NWS: National Waterways Study: 381

NWS: National Weather Service: 374, 378, 412, 469

NWSC: Naval Weather Service Command: 381

NWTC: National Wetland Technical Council: 564

NYB: New York Bight: 371

NYOSL: New York Ocean Science Laboratory: 442

NYSGI: New York Sea Grant Institute: 442

NYU: New York University: 443

NZOI: New Zealand Oceanographic Institute: 313, 642

OAA: Organisation de l'Alimentation et de l'Agriculture:

OAAC: Ocean Affairs Advisory Committee: 410

OAB: Ocean Affairs Board: See NAS/OAB

OACI: Organisation de l'Aviation Civile Internationale: See ICAO

OAMEX: Ocean-Atmosphere Exchange Processes: 122

OARN: Officine Allestimento e Riparazioni Navi: 630

OARS: Ocean Atmosphere Response Studies: 322, 371

OAS: Oceans and Aquatic Sciences: 602

OAS: Office of Oceanic and Atmospheric Services: 374

OAS: Organization of American States: 88

OASIS: Oceanic and Atmospheric Scientific Information System: 375, 418

OAU: Organization of African Unity: 87

OAU/STRC: Scientific and Technical Research Commission of the Organization of African Unity: 87, 283

OBS: Office of Biological Service: 408

OBSS: Ocean Bottom Scanning Sonar

OCAC: Ocean Acre Project: 392

OCC: Ocean Coordinating Committee: 538

OCDE: Organizacion de Cooperacion y Desarrollo Economicos: See OECD

OCDE: Organisation de Cooperation et Development Economiques: See OECD

OCEANAV: Naval Oceanography Command: 391

OCEANAV: Oceanographer of the Navy: 391

OCIMF: Oil Corporation International Marine Forum: 206

OCMI: Organizacion Consultativa Maritima Interguvernamental: See IMCO

OCS: Outer Continental Shelf: 354, 669

OCSAB: Outer Continental Shelf Advisory Board: 359

OSCS: Outer Continental Shelf Committee: 354

OCSEA: Outer Continental Shelf Environmental Assessment: 371

OCSEAC: Outer Continental Shelf Environmental Studies Advisory Commission: 401

OCSEAP: Outer Continental Shelf Environmental Assessment Program: 371, 402, 421

OCSEF: Outer Continental Shelf Events File: 409

OCSEP: Outer Continental Shelf Energy Program

OCW: Oceanographic Commission of Washington: 452

OCZM: Office of Coastal Zone Management: 368, 373

ODAS: Ocean Dynamics Advisory Subcommittee: 415

OES/SCI: Scientific and Technological Affairs, Bureau of Oceans and International Environmental and Scientific Affairs: 410

OETB: Ocean Economics and Technology Branch: 1

OFTB: Offshore Technology Board: 662

OFC: Oregon Fish Commission: 445

OFINTAC: Offshore Installations Technical Advisory Committee: 662

OFW: Operation Fish Watch: 369

OGI: Oceanic Gamefish Investigation: 369

OGS: Osservatoria Geofisico Sperimentale: 630

OHI: Organisation Hydrographique Internationale: See IHO

OHI: Organization Hidrografica Internacional: See IHO

OHM/TADS: Oil and Hazardous Material/Technical Assistance Data System: 513

OHP: Operational Hydrology Programme: 29

OIA: Oceanic Industries Association: 573

OIEA: Organismo Internacional de Energia Atomica: See IAEA

OIEO: Ocean Instrumentation Engineering Office: 372

OIT: Organisation Internationale du Travail: See ILO

OIW: Oceanographic Institute of Washington: 372, 452

OLIC: Oceanic Library and Information Center: 574

OMA: Ocean Mining Associates: 572

OMBP: Office of Management, Budget, and Planning: 427

OMCI: Organisation Intergouvernementale Consultative de la Navigation Maritime: See IMCO

OMM: Organizacion Meteorologica Mundial: See WMO

OMM: Organisation Meteorologique Mondiale: See WMO

OMS: Organizacion Mundial de la Salud: See WHO

OMS: Organisation Mondiale de la Sante: See WHO

ONGC: Oil and Natural Gas Commission: 625

ONP: Office National des Peches: 638

OSCR: Office of Secretary of Commerce and Resources: 451

OSDC: Oceanographic Subprogramme Data Centre: 347, 617

OSG: Office of Sea Grant: 370, 372, 373

OGSD: Office of Sea Grant Development: 433

OSIC: Ocean Science Information Center: 430

OSMIC: Ocean Shores Marine Information Center: 452

OSP: Optimum Sustainable Population: 667

OSS: Oceanic Space Subcommittee: 354

OSSE: Observing Systems Simulation Experiment: 349

OSTAC: Ocean Science Technology Advisory Committee: 561

OSU: Ohio State University: 444

OSU: Oregon State University: 445

OSV: Ocean Station Vessel

OSW: Office of Saline Water: 407

OTA: Office of Technology Assessment: 356

OTAN: Organisation du Traite de l'Atlantique Nord: See NATO

OTASE: Organisation du Traite de Defense Collective pour l'Asie du Sud-Est: See SEATO

OTBA: Ocean Thermal Boundary Analysis Charts: 378

OTC: Offshore Technology Conference: 205

OTEC: Ocean Thermal Energy Conversion: 372, 399, 447

OTH: Over The Horizon Radar: 398

OTP: Ocean Test Platform: 37

OUA: Organizacion de la Unidad Africana: See OAU

OWDC: Office of Water Data Coordination: 409

OWRC: Ontario Water Resources Commission: 604

OWRR: Office of Water Resources Research: 407

OWRT: Office of Water Research and Technology: 407

OWS: Ocean Weather Ship

OY: Optimum Yield: 666

PACE: Petroleum Association for Conservation of the Environment: 604

PACES: Pacific Area Cooperative Enforcement System: 422

PACRIM: Pacific Rim Alliances of Marine Technology Sections: 547

PAHO: Pan American Health Organization: 88

PAIGH: Pan American Institute of Geography and History: 88

PAN: Polska Akademia Nauk: 650

PAN PAC: Pan Pacific Institute of Oceans and Sciences: 579

PARKA: Pacific Acoustic Research Kaneohe-Alaska: 392, 430

PASGAP: Pacific Sea Grant Advisory Program

PAU: Pan American Union: 88

PAWE: Programme for the Analysis of World Ecosystems: 332

PBI: Programme Biologique Internationale: See IBP

PBRC: Pacific Biomedical Research Center: 430

PCA: Pollution Control Agency: 438

PCM: Profiling Current Meter

PCSP: Permanent Commission of the South Pacific: 89

PEB: Prototype Environmental Buoy: 372

PECC: Panel of Experts on Climatic Change: 28

PEEP: Panel of Experts on Environmental Pollution: 28

PEG: Pacific Environmental Group: 369

PEMEX: Petroleos Mexicanos: 637

PESCOM: Empressa Nacional de Comercializacao de Produtos Presquieros: 639

PETROBRAS: Petroleo Brasileiro

PFC: Pennsylvania Fish Commission: 446

PFMC: Pacific Fishery Management Council: 369

PFZ: Polar Front Zone

PHI: Programme Hydrologique International: See IHP

PHOTO: Bottom Photograph Camera Station File: 375

PHS: Public Health Service: 400

PIANC: Permanent International Association of Navigational Congresses: 163, 212, 216

PICG: Programme Internationale de Correlation Geologique: See IGCP

PICO: Polar Ice Core Drilling Office: 416

PIM: Pacem in Maribus: 187

PIMA: Petroleum Industries Marine Association: 632

PINRO: Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii: 661

PIOSA: Pan Indian Ocean Scientific Association: 208

PIPICO: Panel on International Programs and International Cooperation in Ocean Affairs: 361

PIRS: Pollution Incident Reporting System: 412

PMBC: Phuket Marine Biological Center: 242

PMC: Pacific Marine Center: 377

PMC: Pacific Missile Center: 382

PMEL: Pacific Marine Environmental Laboratory: 371

PMFC: Pacific Marine Fisheries Commission: 468

PMO: Port Meteorological Office: 377

PMRF: Pacific Missile Range Facility: 372

PMS: Pacific Marine Station: 425

PMSL: Pell Marine Science Library: 448

PMTC: Pacific Missile Test Center: 382

PNERL: Pacific Northwest Environmental Research Laboratory: 413

PNUD: Programa de las Naciones Unidas para el Desarrollo: See UNDP

PNUD: Programme des Nations Unies pour le Development: See UNDP

PNUE: Programme des Nations Unies pour l'Environment: See UNEP

PNUM: Programa de las Naciones Unidas para el Medio: See UNEP

PNWL: Pacific Northwest Laboratories: 513

PNWRBC: Pacific Northwest River Basin Commission: 362

POBSP: Pacific Ocean Biological Survey Program: 418

PODC: Philippine Oceanographic Data Center: 649

POGSI: Policy Group on Scientific Information: 128

POL: Pacific Oceanographic Laboratory: 371

POLE: (NORPAX sub-program): 355

POLEX: Polar Experiment: 350

POLEX-NORTH: Polar Experiment in the Northern Hemisphere: 350

POLEX-SOUTH: Polar Experiment in the Southern Hemisphere: 313, 350

POLMAR: Plan de la Lutte contre les Pollutions Marines Accidentelles: 617

POLYGON: USSR Mesocale Project in the North Atlantic: 314

POLYMODE: POLYGON Mid-Ocean Dynamics Experiment: 314, 328, 378, 436, 588

POO: Panel On Oceanography: 357

POO: Platforms of Opportunity: 369

POOL: Working Group of Experts on Pollution of the Ocean Originating on Land: 22

POOP: Process Oriented Observation Program: 315

POP: Perpendicular Ocean Platform

POP: Planning for Offshore Ports: 436

POPMIP: Portable Ocean Platform Motion Instrumentation Package

POPS: Free-Fall Pop-Up Ocean Bottom Seismometer

PREMODE: Preliminary Mid-Ocean Dynamics Experiment: 314

PRIMA: Pollutant Response in Marine Animals: 309

PRIME: Processing, Research, Inspection, and Marine Extension: 369

PRINUL: Puerto-Rico International Undersea Laboratory: 447

PRL: Polar Research Laboratories: 580

PRNC: Puerto Rico Nuclear Center: 447

PROBES: Processes and Resources of the Bering Sea Shelf: 421

PRURDCO: Puerto Rico Undersea R & D Corp.: 447

PRWRA: Puerto Rico Water Resources Authority: 447

PSA: Pacific Science Association: 207, 237

PSAC: Presidents Science Advisory Committee: 357

PSACPOO: Presidents Scientific Advisory Committee Panel On Oceanography: 357

PSG: Pacific Sea Bird Group: 578

PSIC: Pacific Science Information Center: 514

PSMSL: Permanent Service for Mean Sea Level: 113, 131, 315

PSWAD: Perspective Study of World Agricultural Development: 17, 331

PTP: Pollution Transfer Program: 310

PTWC: Pacific Tsunami Warning Center: 378

PUBS: Pop-Up Bottom Seismograph

PURC: Pacific Utilization Research Center: 369

PURC: Princeton University Research Center: 371

PWD: Park and Wildlife Department: 450

PWDC: Panel on World Data Centers: 127, 245

R/V: Research Vessel

RA: Regional Associations: 30

RAMOGE: Regional Pollution Studies in the Ligurian Sea: 334

RAN: Royal Australian Navy: 596

RANEL: Royal Australian Navy Experimental Laboratory: 596

RANN: Research Applied to National Needs: 416

RANOSP: Radiological North Sea Project: 662

RANRL: Royal Australian Naval Research Laboratory: 596

RASGAP: Resources Agency Sea Grant Advisory Panel: 422

RASSAN: Radar Sea State Analyzer: 428

RBI: Ruder Boskovic Institut: 665

RCIC: Regional Coastal Information Center: 373

RCV: Remote Controlled Vehicle

RDC: Regional Data Center: 65, 237, 244, 245, 261, 262, 265, 267, 670

REMAC: Reconhecimento da Margem Continental Brasileira: 321, 599

RFCWA: Regional Fisheries Commission for Western Africa: 20

RFMC: Regional Fishery Management Council: 369

RGD: Rijks Geologische Dienst: 640

RHENO: Rhodamine Experiment in the North Sea: 335

RICAT: Recherches Internationales Concertees dans l'Atlantique Tropical: See ICIT

RICRMC: Rhode Island Coastal Resources Management Council: 448

RIDGE: Ridge Interaction and Downstream Gradient Experiment: 313

RIOS: Joint Working Group on River Inputs to Ocean Systems: 227

RISP: Ross Ice Shelf Project: 279

RIST: Radioisotopic Sand Tracer

RITA: Rivera and Tamayo Fault Exploration: 271

RIVO: Rijks Instituut voor Visserijonderzoek: 640

RMBC: Regional Marine Biological Centre: 21, 243, 267

RMC: Regional Meteorological Centre: 668

RMPLWRH: Ralph M. Parsons Laboratory for Water Resources and Hydronamics: 436

RNO: Reseau National d'Observation de la Qualite du Milieu Marin: 617

RNODC: Responsible National Oceanographic Data Center: 280, 670

ROCC: Regional Oil Combating Center: 8

ROMBI: Results of Marine Biological Investigations: 671

ROSCOP: Report of Observations/Samples Collected by Oceanographic Programs: 375, 671

ROSE: Rivera Ocean Seismic Experiment: 452

ROST: Regional Office of Science and Technology: 21

ROSTA: Regional Office of Science and Technology for Africa: 21

ROSTAS: Regional Office of Science and Technology for the Arab States: 21

ROSTLA: Regional Office of Science and Technology for Latin America: 21

ROSTLAC: Regional Office of Science and Technology for Latin American and the Caribbean: 21

ROSTSCA: Regional Office of Science and Technology for South and Central Asia: 21

ROSTSEA: Regional Office of Science and Technology for Southeast Asia: 21

RRDO: Register of Rivers Discharging into the Oceans: 8

RSDC: Radiation Subprogramme Date Center: 347

RSDW: Ross Sea Deep Water

RSMAS: Rosentiel School of Marine and Atmospheric Sciences: 371, 428

RSNT: Revised Single Negotiating Text: 2

RSO: Research Ship of Opportunity

RSPB: Royal Society for the Protection of Birds: 662

RSWW: Ross Sea Winter Water

RTN/HD: Royal Thai Navy/Hydrographic Department: 659

RUFAS: Remote Underwater Fishery Assessment System: 369

RUM: Remote Underwater Manipulator

RUSEF: Rational Use of the Sea Floor: 371

RUWS: Remote Unmanned Work System: 390

RW: Rijkswaterstaat: 640

S DRAKE: Second Dynamic Response and Kinematics Experiment: 313

SAASW: Sub-Antarctic Surface Water

SAB: Scientific Advisory Board: 22

SAC: Shellfish Advisory Committee: 442

SACI: South Atlantic Cooperative Investigation: 144, 337

SCARF: Santa Cruz Acoustic Range Facility: 382

SCBS: Southern California Bight Studies: 424

SCCC: South Carolina Coastal Council: 448

SCCWRP: Southern California Coastal Water Research Project: 423

SCENE: Studies of Coastal and Estuarine Environments: 371

SCEP: Study of Critical Environmental Problems: 436

SCIBP: Special Committee for the International Biological Programme: 124, 286

SCMS: Somali Current Monitoring System: 348

SCODS: Study Commission on Ocean Data Stations: 298, 361

SCOPE: Southern Coastal Plains Expedition: 377

SCOPE: Scientific Committee on Problems of the Environment: 125, 241, 325

SCOR: Scientific Committee on Oceanic Research: 21, 122, 225, 227, 229, 234, 237, 254, 256, 293, 352, 671

SCORE: Scientific Cooperative Operational Research Expedition: 372

SCOSC: Southern California Ocean Studies Consortium: 424

SCOSTEP: Special Committee on Solar-Terrestrial Physics: 126

SCSHC: South China Sea Hydrographic Commission: 92

SCUBA: Self-Contained Underwater Breathing Apparatus

SCWMRD: South Carolina Wildlife and Marine Resources Department: 449

SDC: Sub-Programme Data Centre: 347

SDP: Shelf Dynamics Program: 322

SEA: Sea Education Association: 443, 581

SEA ECHO: North Pacific Sea Condition Monitoring Program: 398

SEA USE: Cobb Seamount Habitat Study: 452

SEADOCK: Texas Deepwater Port Consortium: 450

SEADROP: Small Expendable Air-Dropped Remote Ocean Platform

SEAMAP: Systematic Exploration and Mapping Program: 377

SEAN: Scientific Events Alert Network: 418

SEAREX: Sea/Air Chemical Exchange: 311

SEAS: Shipboard Environmental Data Acquisition System: 378

SEASAT: NOAA Ocean Satellite: 376, 415

SEASCO: Southeast Asia Science Cooperation Office: 21

SEATAR: CCOP/TOC Joint Working Group on IDOE Studies on East Asia Tectonics and Resources: 22

SEATO: Southeast Asia Treaty Organization: 91

SEC: South Equatorial Current

SECC: South Equatorial Counter Current

SECC: State Emergency Communications Committee: 378

SECNAV: Secretary of the Navy: 382

SECS: Seagrass Ecosystems Component Study: 323

SEED: School of Engineering and Environmental Design: 428

SEEP: Shelf Edge Exchange Processes: 516

SEFC: Southeast Fisheries Center: 369

SEG: Society of Exploration Geophysicists: 586

SEPB: Swedish Environmental Protection Board: 657

SEPM: Society of Economic Paleontologists and Mineralogists: 585

SES: Seagrass Ecosystem Study: 323

SESAME: Severe Environmental Storms and Mesocale Experiment: 378

SEVPINRO: Severnyy Polyarnyy Nauchno-Issledovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii: 661

SFB: Sea Fisheries Branch: 654

SFBCDC: San Francisco Bay Conservation and Development Commission: 423

SFG: Sonderforschungsberichte: 620

SFI: Sport Fishing Institute: 587

SFRF: Sport Fishing Research Foundation: 587

SFRS: Sea Fisheries Research Station: 629

SG: Sea Grant: 373

SHC: Service Hydrographique de la Cote: 598

SHODB: Seyir Hidrografi ve Osinografi Dairesi Baskanligi: 660

SHML: Sandy Hook Marine Laboratory: 442

SHN: Servicio de Hidrografia Naval: 595

SHOM: Service Hydrographique et Oceanographique de la Marine: 617

SHORAN: Short Range Navigation

SHU: Scandinavian Hydrographic Union: 84, 90

SI: Smithsonian Institution: 240, 392, 418

SIBEX: Second International BIOMASS Experiment: 256

SIC: Secretaria de Industria y Comercio: 637

SIMAS: Sonar In-Situ Mode Assessment System: 397

SINA: Shellfish Institute of North America: 582

SIO: Scripps Institution of Oceanography: 295, 422, 424

SIO: Skidaway Institute of Oceanography: 429

SIPRI: International Institute for Peace and Conflict Research: 182

SITS: Scientists in the Sea: 372

SKAMP: Station Keeping and Mobile Platform

SKIO: Skidway Institute of Oceanography: 429

SKYLAB: Oceanic Gamefish Investigation: 369

SLP: Sea Level Pressure

SLPA: Selected Legally Protected Animals: 381

SLRAC: St. Lawrence River Advisory Committee: 442

SLURP: Self Leveling Unit for Removing Pollution

SMA: Servicio Meteorologico de la Armada: 605

SMAM: Servizio Meteorologico dell'Aeronautica Militaire: 630

SMBA: Scottish Marine Biological Association: 662

SMF: Service Maritime Fluvial: 618

SOPDOSS: Submersible Oriented Platform for Deep Ocean Sediment Studies

SOR: Spilled Oil Research: 371

SORT: Spilled Oil Response Team: 371, 375

SOSC: Smithsonian Oceanographic Sorting Center: 418

SOSS: Shipboard Oceanographic Survey System: 392

SOSU: Seattle Ocean Services Unit: 378

SOUL: Studies of Ocean Upper Layers: 371

SOUQAR: Section d'Oceanographie d'Universitie de Quebec a Rimouski: 603

SPAR: Seagoing Platform for Acoustic Research

SPB: Service des Phares et Balises: 638

SPC: South Pacific Commission: 93

SPCC: Spill Prevention Control and Countermeasures

SPIFDA: South Pacific Island Fishery Development Agency: 93

SPMT: Service Permanent des Marees Terrestres: 132

SPOC: Spacecraft Oceanography Project: 376

SPRI: Scott Polar Research Institute: 662

SRC: Ship Research Committee: 419

SRFRL: Seikai Regional Fisheries Research Laboratory: 632

SRFU: Seal Research and Fisheries Unit: 662

SRH: Secretaria de Recursos Hidraulicos: 637

SRI: Stanford Research Institute: 588

SRP: Seismic Reflection Profile

SSC: Ship Structure Committee: 419

SSDC: Synoptic-Scale Subprogramme Data Centre: 347

SSFA: Sound and Sea Fisherman's Association, Inc: 443

SSIE: Smithsonian Science Information Exchange: 418

SSMO: Summary of Synoptic Meteorological Observations: 375

SSRS: Submarine Sand Recovery System

SSS: Standard Seawater Service: 662

SST: Sea Surface Temperature

SSWWS: Seismic Sea Wave Warning System: 378

STACRES: Standing Committee for Research and Statistics: 63

STAEP: Scientific and Technical Assessment of Environmental Pollutants: 419

STAX: Sludge Tracking Acoustical Experiment: 371

STD: Salinity/Temperature/Depth

SSXBT: Submarine Expendable Bathythermograph:

STEP: Service Technique des Equipments Profonds: 617

STOR: Scripps Tuna Oceanography Research Program: 424

STORET: Storage and Retrieval For Water Quality Data: 413

STORMFURY: Hurricane Modification Program: 371

STRC: Scientific and Technical Research Commission: See OAU/STRC

STRI: Smithsonian Tropical Research Institute: 418

SU: Stanford University: 425

SUBTRAP: Submersible Training Platform

SUC: Sea Use Council: 469

SUE: Sahara Upwelling Experiment: 96, 265

SUE: Skylab Upwelling Experiment: 265

SURF: Compagnie des Moyens de Surface Adaptes a l'Ocean: 617

SUF: Shimonoseki University of Fisheries: 632

SUNY: State University of New York: 442

SURGE: SEASAT Users Group of Europe: 57

SURSAT: Satellite Surveillance Program: 602

SUSF: State University System of Florida: 428

SUSIO: State University System (of Florida) Institute of Oceanography: 372, 428

SWACM: Southwest Atlantic Continental Margin Studies: 321

SWAFAC: South West Atlantic Fisheries Advisory Commission: 20

SWFC: Southwest Fisheries Center: 369, 422

SWIRS: Solid Waste Information Retrieval System: 413

SWIS Sensitive Wildlife Information System: 381

SWORD: Shallow Water Oceanographic Research Data: 377

SXBT: Surface Expendable Bathythermograph

SYNAPSE: CUEA Synthesis and Publication Segment: 322

SYNBAPS: Synthetic Bathymetric Profiling System: 398

SYNDARC: Standard format for exchange of MAPMOPP data among Data Centers: 671

SYNOPS: Synoptic Observations of Profiles in the Straits (of Florida): 428

TAAF: Terres Australes et Antarctiques Francaises: 617

TABL: Tropical Atlantic Biological Laboratory: 369

TAC: Total Allowable Catch: 666

TAG: Technical Advisory Group: 12, 263

TAG: Transatlantic Geotraverse: 319

TAMU: Texas A&M University: 450

TARAV: Tidewater Artificial Reef Association of Virginia: 451

TASS: Towed Acoustic Surveillance System

TAWS: Tactical Automatic Weather Station (Buoy)

TC: Tidal Constants Data Base: 377

TCB: Technical Cooperation Bureau: 633

TCD: Trinity College, Dublin: 628

TCMC: Texas Coastal and Marine Council: 450

TCS: The Coastal Society: 589

TDPA: Texas Deepwater Ports Authority: 450

TEB: Tropical Experiment Board for GATE: 30, 347

TEC: Tropical Experiment Council for GATE: 30, 347

TEMA: Training, Education, and Mutual Assistance in the marine sciences (IOC Working Committee): 22

TENOC: Ten Year Oceanographic Plan (U.S. Navy): 382

TESAC: Temperature, Salinity, and Currents (radio message): 280, 671

THD: Transport and Harbors Department: 622

THRFRL: Tohuku Regional Fisheries Research Laboratory: 632

THUMS: Texaco, Humble, Union, Mobile, and Shell Four-Island Man-Made Complex

TIC: Technical Information Center: 520

TICUS: Tidal Current Survey System: 377

TIDES: Tides Data Base: 377

TINRO: Tikhookeanskiy Nauchno-Issledovatel'skiy Institut Rybnogo Khozyaystva i Okeanografii: 661

TIPS: Transportation Induced Pollution Surveillance

TIRKH: Tikhookeanskiy Institut Rybnogo Khozyaystva: 661

TIROS: Television Induced Observation Satellite

TNDC: Thai National Documentation Centre: 659

TOAD: Towed Optical Assessment Device: 369

TOBS: Telemetering Ocean Bottom Seismometer

TOC: Total Organic Carbon

TODAS: Towed Oceanographic Data Acquisition System: 381

TOGI: Trans-Oceanic Geophysical Investigations

TONS: Tikhookeanskaya Okeanograficheskaya Nauchnaya Stantsiya: 661

TOTO: Tongue of the Ocean: 382

TRANSPAC: Thermal Structure Monitoring Program in the Pacific: 315

TRANSPAC-MAG: PMEL/NOAA Project--Magnetic Anomalies: 371

TRF: Tuna Research Foundation: 590

TRIDENT: South Atlantic Cooperative Investigation Phase: 144, 337

TRIGOM: The Research Institute of the Gulf of Maine: 434

TROMEX: Tropical Oceanographical and Meteorological Experiment: 345

TROPEX: Tropical Experiment: 351

TROV: Tethered Remotely Operational Vehicle

TSNIITEIRKH: Tsentral'nyy Nauchno-Issledovatel'skiy Institut Informatskiy i Techniko Ekonomicheskikh Issledovaniy Rybnogo Khozyaystva: 660

TUF: Tokyo University of Fisheries: 632

TWERLE: Tropical Wind Energy Conversions and Reference Level Experiments (U.K.): 662

TWOS: Tropical Wind Observing Ships: 346

TWQB: Texas Water Quality Board: 450

TWS: Tsunami Warning System

TWZO: Trade Wind Zone Oceanography

TYPOE: Ten Year Plan for Ocean Exploration: 361

UABC: Universidad Autonoma de Baja California: 637

UAI: Union des Associations Internationales: See UIA

UAL: University of Alaska: 398, 421

UAN: Ukrainskaya Akademiya Nauk: 661

UATI: Union de Asociaciones Tecnicas Internacionales: See UIEO

UATI: Union des Associations Techniques Internationales: See UIEO

UBCIO: University of British Columbia Institute of Oceanography: 603

UC: University of California: 424

UCAR: University Corporation for Atmospheric Research: 416

UCC: University College, Cork: 628

UCD: University of California at Davis: 424

UCG: University College, Galway: 628

UCSB: University of California at Santa Barbara: 424

UCSC: University of California at Santa Cruz: 424

UCSD: University of California at San Diego: 424

UCT: University of Connecticut: 426

UCTIO: University of Cape Town Institute of Oceanography: 654

UPR: University of Puerto Rico: 261, 447

URDA: Unite Regionale de Development de l'Aquaculture:

URI: University of Rhode Island: 392, 430, 448

URSI: Union Radioscientifique Internationale: See IURS

URV: Undersea Research Vehicle

USARP: United States Antarctic Research Program: 416, 428, 442

USC: University of South Carolina: 448

USC: University of Southern California: 425

USC&GS: United States Coast and Geodetic Survey: 377

USCG: United States Coast Guard: 67, 369, 372, 411, 412

USCGAUX: United States Coast Guard Auxiliary: 412

USCMH: U.S. Commission of Maritime History: 418

USEMA: Under Seas Equipment Manufacturers Association: 591

USF: University of South Florida: 428

USF&WS: United States Fish and Wildlife Service: 408

USGS: United States Geological Survey: 409

USIC: Undersea Instrument Chamber

USLS: United States Lake Survey: 377

USMMA: U.S. Merchant Marine Academy: 365

USN: United States Navy: See DON

USNOO: United States Naval Oceanographic Office: 392

USNUSL: Naval Underwater Sound Laboratory: 397

USREC: U.S. Environment and Resources Council: 219

UT: University of Texas: 450

UTI: Union Telegraphique Internationale: 32

UTMB: University of Texas Medical Branch: 450

UVA: University of Virginia: 451

UW: University of Washington: 250, 371, 372, 452

UW/APL: University of Washington Applied Physics Laboratory: See APL/UW

UWF: University of West Florida: 428

UWIS: University of Wisconsin: 453

VACM: Vector Averaging Current Meter

VAP: Voluntary Assistance Programme: 22, 27

VCM: Vertical Current Meter

VFL: Virginia Fisheries Laboratory: 451

VIMS: Virginia Institute of Marine Science: 451, 455

VISKOR: Fisheries Development Corporation: 654

VLCC: Very Large Crude Carrier

VML: Vening Meinesz Laboratorium: 640

VMM: Vigilancia Meteorologica Mundial: See WWW

VMM: Veille Meteorologique Mondiale: See WWW

VMRC: Virginia Marine Resources Commission: 451

VNIRO: Vsesoyuznyy Nauchno-Isseldovatel'skiy Institut Morskogo Rybnogo Khozyaystva i Okeanografii: 661

VOLNA: Study of Surface and Internal Waves: 661

VOS: Voluntary Observing Ships: 346

VPISU: Virginia Polytechnic Institute and State University: 451

VSWCM: Virginia Sea Wave Climate Model: 451

WACAS: Wave and Current Advisory Service: 662

WAFR: World Appraisal of Fishery Resources: 331

WARC: World Administrative Radio Conference: 280

WAMEX: West African Monsoon Experiment: 348

WATDOC: Water Resources Document Reference Centre: 602

WATSTORE: National Water Data Storage and Retrieval System: 409

WB: Weather Bureau: 375, 378, 649, 654

WBC: Western Boundary Current

WBTF: Wrightsville Beach Test Facility: 407

WCS: Wave Climate Study: 602

WISE: Workshop on Impact Studies in the Environment: 125

WISP: Winter-Spring Study of Oceanographic Conditions off the Oregon Coast: 445

WMARC: World Maritime Administrative Radio Conference: 280

WMO: World Meteorological Organization: 21, 26, 27, 33, 36, 38, 112, 189, 229, 237, 239, 249, 261, 272, 280, 284, 290, 325, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 375, 378, 632, 640, 668

WMPO: Weather Modification Program Office: 371

WMRD: Wildlife and Marine Resources Department: 449

WMS: World Magnetic Survey: 110

WMSQ: World Magnetic Survey Board: 110

WOC: World Oceanographic Centre: 280

WODA: World Dredging Association: 212, 218

WODCON: World Dredging Conference: 218

WOO: World Oceanographic Organization: 21

WPCF: Water Pollution Control Federation: 593

WPFMC: Western Pacific Fishery Management Council: 369

WPL: Wave Propagation Laboratory: 371

WQUIS: Water Quality Indicator System: 372

WRC: Water Resources Council: 362

WRNWS: World-Wide Radio Navigation Warning System: 25

WRRC: Water Resources Research Center: 430

WRRI: Water Resources Research Institute: 407

WRSIC: Water Resources Scientific Information Center: 407

WSFO: Weather Service Forecast Office: 378

WSG: Washington Sea Grant Program: 451

WSMRC: WAMEX Scientific and Management Regional Commission: 348

WWF: World Wildlife Fund: 224, 446

WWW: World Weather Watch: 272, 280, 353, 361

XBT: Expendable Bathythermograph: 391

XERB: Experimental Environmental Research Buoy: 372

XSTD: Expendable Salinity/Temperature/Depth Probe:

XSV: Expendable Sound Velocimeter

XWCC: Expanded Water Column Characterization: 371

YU: Yale University: 426

ZBM: Zavodza Biologiju Mora: 665

ZOIG: Zaklad Oceanologii Instytut Geofizy: 650

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